URBAN WATER MANAGEMENT PLAN
2015 UPDATE

CALIFORNIA CITY, CALIFORNIA

APRIL 2017

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ABBREVIATIONS – Entities

AVEK ..... Antelope Valley East Kern Water Agency
CCC ..... California City Correctional Center
CDPH ..... California Department of Public Health
DWR ..... Department of Water Resources
IRWMG ..... Integrated Regional Water Management Group
IRWMP ..... Integrated Regional Water Management Plan
KCWA ..... Kern County Water Agency
MPUD ..... Mojave Public Utilities District
SWRCB ..... State Water Resources Control Board
UWMP ..... Urban Water Management Plan
UWMPA ..... Urban Water Management Plan Act
UWMPGB ..... UWMP 2010 Guidebook
WMP ..... Water Master Plan

ABBREVIATIONS – Terminology & Units

AB ..... State Assembly Bill
ac ..... acre
ADD ..... Average Daily Demand
af ..... acre-feet
afy ..... acre-feet per year
AVGB ..... Antelope Valley Groundwater Basin
bgs ..... below ground surface
CII ..... Commercial, Industrial and Institutional
CWC ..... California Water Code
DMM ..... Demand Management Measures
DU ..... dwelling unit
ET_0 ..... Reference Evapo-transpiration
ft ..... feet
FVGB ..... Fremont Valley Groundwater Basin
gpd ..... gallons per day
gpcd ..... gallons per capita per day
MCL ..... Maximum Contaminant Level
MDD ..... Maximum Day Demand
MG ..... million gallons
MGd ..... million gallons per day

MGy .....million gallons per year
mg/L ..... milligrams per liter
PHG .....Public Health Goal
PHD.....Peak Hour Demand
psi.....pounds per square inch
SB .....State Senate Bill
SCADA .....Supervisory Control and Data Acquisition
ULF .....Ultra-Low Flush toilet

1 INTRODUCTION

1.1 Purpose

The Urban Water Management Plan (UWMP) is a requirement of the Urban Water Management Planning Act (UWMPA) (Division 6, Part 2.6 of the California Water Code (CWC) §10610-10656). The UWMPs must be prepared every five years and submitted to the Department of Water Resources (DWR). The submittal is required to meet the requirements of the UWMPA, including the most current amendments. The UWMPA applies to urban water suppliers with 3,000 or more connections or supplying more than 3,000 acre-feet (af) (978 mgy) of water annually.

UWMPs are required of the state's urban water suppliers in an effort to assist their resource planning and to ensure adequate water supplies are available for future use. A secondary purpose of the UWMP is to provide a plan for a series of actions to be implemented during water shortage situations. This report was prepared according to the requirements of the CWC, UWMPA and the UWMP Guidebook 2015 (March 2015).

1.2 Background

1.2.1 Urban Water Management Planning Act

In 1983, Assembly Bill (AB) 797 altered Division 6 of the CWC by producing the UWMPA. Since 1983, several amendments to the Act have modified and added to the requirements of the UWMPs submitted today. One such amendment required projections for water use to extend 20 years at 5-year intervals. Recently, this has been increased to a 25 year projection providing for a minimum 20-year projection up until the next UWMP is completed.

Various other amendments have increased requirements to include sections on recycled water use, demand management measures (DMMs), and water shortage contingency plans. Recycled water use sections were added to assist in evaluation of alternate water supplies for future use when projects exceed the current water supplies. Demand management measures must be clearly described including which measures are being implemented and which are scheduled for implementation in the future. Water contingency plans are to be prepared and coordinated with other water suppliers in the area for use during times of drought. Pertinent legislation that is applicable to UWMPs includes:

Table 1.2-1: Key Legislation Affecting the 2015 UWMP

Legislation	2015 UWMP Requirements (addition summary)
AB 2067 (Weber 2014) CWC Section 10631 (f)(1)and(2)	Demand Management Measures (DMM): Provide narratives describing their 2010 water demand management measures. Address the nature and extent of each DMM implemented over the past 5 years and DMM that the supplier plans to implement to achieve its water targets. (see Section 9 of this 2015 UWMP)
AB 2067 (Weber 2014) CWC Section 20261 (d)	Submittal Date: Supplier should submit the 2015 UWMP to the Department of Water Resources by July 1, 2016
AB 1420 (Wolk 2014) CWC Section 10644(a)(2)	Submittal Format: Requires the plan to be submitted electronically to the department in the standardized forms, tables, or displays specified by the department.
AB 1420 (Wolk 2014) CWC Section10631(e)(1)(J) and (e)(3)(A) and (B)	Water Loss: Quantify and Report on distribution System Water Loss. (see Section 4.5 of this 2015 UWMP)
AB 1420 (Wolk 2014) CWC Section10631(e)(4)	Passive Savings (voluntary reporting): Provides for water use projections to display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans, when that information is available and applicable to an urban water supplier
AB 1036 (Pavley 2014) CWC Section10631.2(a) and (b)	Energy Intensity (voluntary reporting): Provides for the inclusion of certain energy-related information, including, but not limited to, an estimate of the amount of energy used to extract or divert water supplies.
AB 1036 (Pavley 2014) CWC Section10632	Defining Water Features: Commencing with the 2015 UWMP, for purposes of developing the water shortage contingency analysis, requires urban water suppliers to analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.

Table 1.2-2: Key Legislation Affecting the 2010 UWMP

Legislation	2010 Requirements
SB610 and AB901	Consideration of water availability when reviewing new large developments
SB318	Investigate possibilities of developing desalinated water
AB105	Submit UWMP to State Library
SBx7-7 Water Conservation Act (2009)	Urban water suppliers to reduce the statewide average per capita daily water consumption by 20% by December 31, 2020 (20x2020 Plan)
AB1420	Water management grants or loans awarded or administered by the Department of Water Resources (DWR), State Water Resources Control Board (SWRCB)…be conditioned on the implementation of the water Demand Management Measures (DMM) described in Water Code Section 10631(f)
AB1465	Requires member of the California Urban Water Conservation Council to comply with UWMP requirements in accordance with the Urban Water Management Planning Act.
AB2572	All urban water suppliers are required to install water meters on all municipal and industrial water service connections on or before January 1, 2005 and, on or before January 1, 2010, to charge each customer that has a service connection for which a meter has been installed, based on volume of deliveries, as measured by the water meter.

1.2.2 Previous Urban Water Management Plan

The City previously prepared and submitted the UWMP in 2010. This 2015 UWMP retains critical relevant data from the 2010 UWMP plan and provides relevant updates that comply with all new requirements and regulations.

1.3 Resource Maximization/Import Minimization

The City of California City optimizes many water management strategies and tools to maximize water resources and minimize the need for imported water. In an effort to improve the City's water efficiency and conservation the City has done the following.

The City is a part of the newly formed Fremont Valley Integrated Regional Water Management Group (IRWMG), consisting of California City, Mojave Public Utility District (MPUD) and Antelope Valley East Kern Water Agency (AVEK). The IRWMG was officially accepted by the state and is working on an Integrated Regional Water Management Plan (IRWMP).

1.3.1 Previous Studies

The "Evaluation of Groundwater Resources in California City" (Stetson Engineers, December 2008) discusses regional geology and hydrology, and groundwater production, storage, recharge and quality. This study provides estimates of the "safe yield" of the groundwater basin underlying California City.

The Water Master Plan (WMP) (Quad Knopf, 2002) includes information regarding the City's water use, distribution system, future expansions and growth projections. The WMP is intended to provide a plan to guide water system improvements through 2020. It will be periodically updated to adjust for new conditions and growth within the City.

2 PLAN PREPARATION

2.1 General UWMP Plan and Agency Information

This plan is an Individual UWMP prepared by the California City for Public Water System number 1510032. The California City is a retail water supplier that operates its water system based on calendar years and Millions of Gallons (MG) are the water unites as reported in this report. The City does not supply water to other water supply agencies. The City receive water from Antelope Valley East Kern (AVEK). The City is a part of the Fremont Valley Integrated Regional Water Management Group (IRWMG),

Table 2.1-1(UWMGB 2-1): Public Water Systems

Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
1510032	City of California	4,411	1,175
	TOTAL	4,411	1,175
NOTES:			

Table 2.1-2(UWMGB 2-2): Plan Identification

Table 2-2: Plan Identification			
Select Only One	Type of Plan		Name of RUWMP or Regional Alliance *if applicable* *drop down list*
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☑	Water Supplier is also a member of a Regional Alliance	Other
☐	**Regional Urban Water Management Plan (RUWMP)**		
NOTES: Fremont Basin IRWM -City of California City, AVEK, Mojave Public Utility District			

Table 2.1-3(UWMGB 2-3): Agency Identification

Table 2-3: Agency Identification	
Type of	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Date that the Fiscal Year Begins (mm/dd)	
Units of	
Unit	MG
NOTES:	

Table 2.1-4(UWMGB 2-4): Water Supplier Information Exchange

Table 2-4 Retail: Water Supplier Information Exchange
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name *(Add additional rows as needed)*
none/ NA
NOTES:

2.2 Plan Coordination

Legal Requirements:

§10620(d)(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

§10621(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by §10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, a city or county that receives notice pursuant to this subdivision.

§10635(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

§10642 Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.

§10642 Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.

The City is the sole water supplier for the area and thus the City did not seek regional participation. However, the efforts to prepare this UWMP were coordinated with appropriate agencies to provide the most accurate and clear assessment of the water supply situation in the City.

Table 2.2-1: Coordination with Appropriate Agencies

Coordinating Agencies[1]	Participated in Developing the Plan	Commented on the Draft	Attended Public Meetings	Was Contacted for Assistance	Was Sent a Copy of the Draft Plan	Was Sent a Notice of Intention to Adopt
Antelope Valley East Kern (AVEK)				X		X
Mojave Public Utility District (MPUD)				X		X
Kern County Water Agency (KCWA)				X		X
Kern County Development Services Agency				X		X
Kern County Supervisor (District 2)				X		X

Table 2.2-2 (UWMGB 10-1): Notification to Cities and Counties

Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
California City	☑	☑
	☐	☐
	☐	☐
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
Kern County	☑	☑
	☐	☐

2.3 Plan Adoption, Submittal, and Implementation

Legal Requirements:

§10640 – 10621(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3.

§10642 After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

§10643 An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

§10644(a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

§10645 Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

The City will hold a public hearing and adopt the 2015 UWMP on April 11th 2017. A copy of the adopting resolution is included in Appendix A. Prior to the public hearing; a notice will be published notifying the public of the pending hearing.

Once the UWMP has been adopted, a copy of the UWMP and amendments will be submitted to Kern County, DWR and the State Library. Once submitted to DWR, a copy will be made available for public review within 30 days and the reliability and Supply-and-Demand section will be submitted to Kern County within 60 days. The City will also file the appropriate electronic files to the DWR.

3 SYSTEM DESCRIPTION

3.1 Service Area Physical Description

Legal Requirements:

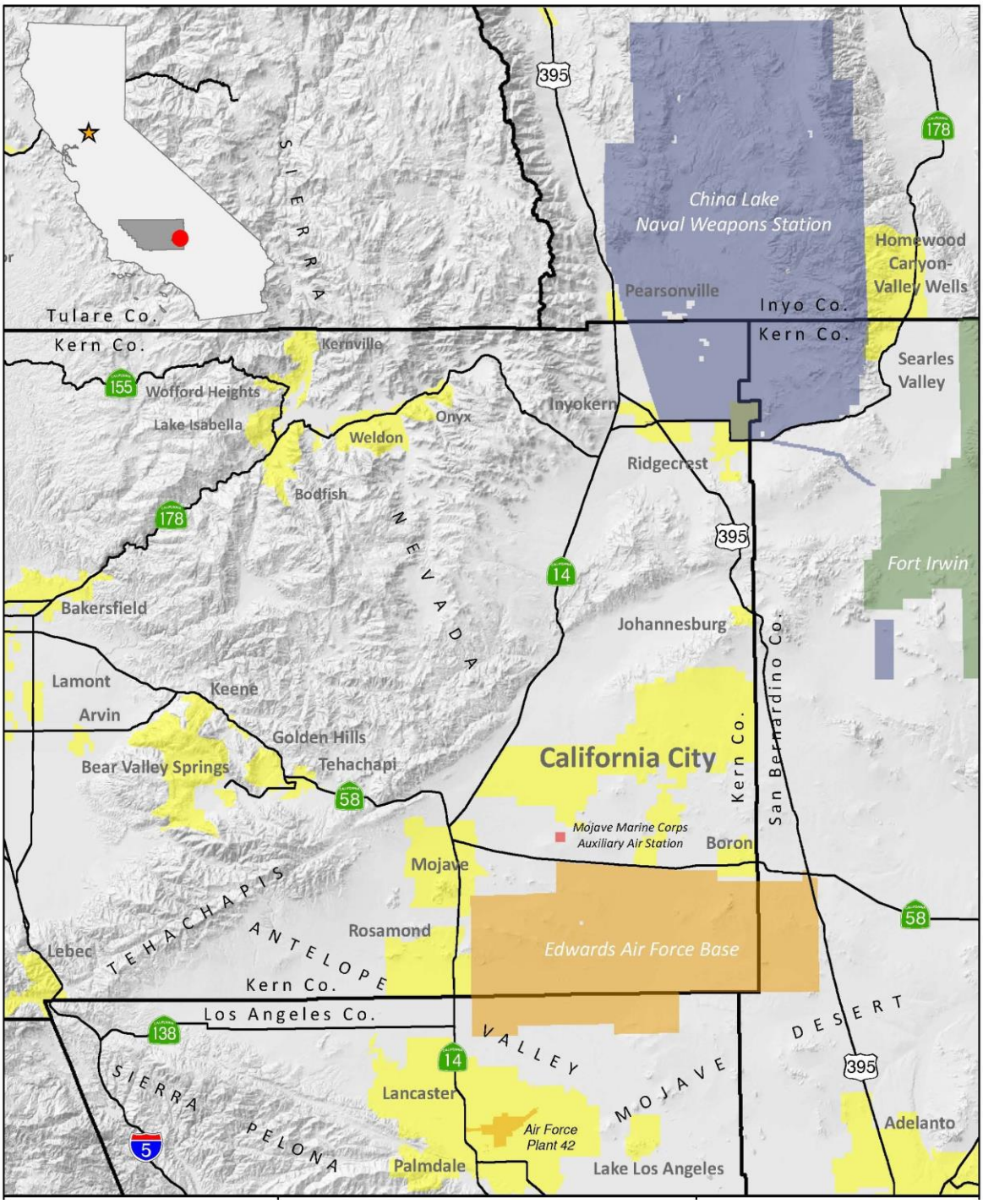
> *§10631(a) Describe the service area of the supplier.*
>
> *§10631(a) (Describe the service area) climate.*

3.1.1 Location

California City is located in southeastern Kern County in the SWRCB South Lahontan Region, approximately 100 miles northeast of Los Angeles and 70 miles southeast of Bakersfield. California City is the third geographically largest city in California with an area of 203.4 square miles. The City is near Highway 58 and Highway 14, which links the City to the other parts of the state.

Of note, there are several military installations in the vicinity. To the southeast is Edwards Air Force Base and to the north is China Lake Naval Weapons Station. However, none of the military installations are near enough to the City to affect one and another's water supplies. Edwards AFB receives water from AVEK, similarly to California City, but through different facilities.

Figure 3.1-1: Regional Location Map



3.1.2 Land Use

The City is located in the Mojave high desert, near mineral rich areas, offering excellent opportunities for mining operations, specifically sodium borate. It is also near many major employment clusters such as Edwards Air Force Base, Mojave Air and Space Port, and the wind and energy development area of east Kern County. The California Correctional Center is the largest employer within the City. **Table 3.1-1** indicates the area for each land use category described in the 2009-2028 General Plan.

Table 3.1-1: Land Use Categories

Land use	Area (acres)	Percent of Total (%)
Single Family Residential	29,392	22.6
Multi-Family Residential	3,900	3.0
Commercial	748	0.6
Industrial	11,217	8.6
Open Space	82,426	63.3
Governmental	181	0.1
Conservation	2,176	1.7
Medical	160	0.1
Total	130,200	100
Source: California City 2009-2028 General Plan		

The single largest land use is open space, consisting of 63.3 percent of the land area. Most of the City's residents live in the "First Community" which contains about 9,600 acres and most of the multi-family and smaller single family residential lots. The "Second Community", which is located to the east of the center of California City, consists of larger lots and is currently sparsely populated. Sewer service is available in portions of the "First Community"; all other areas are served by septic tanks with onsite subsurface disposal.

3.1.3 Climate

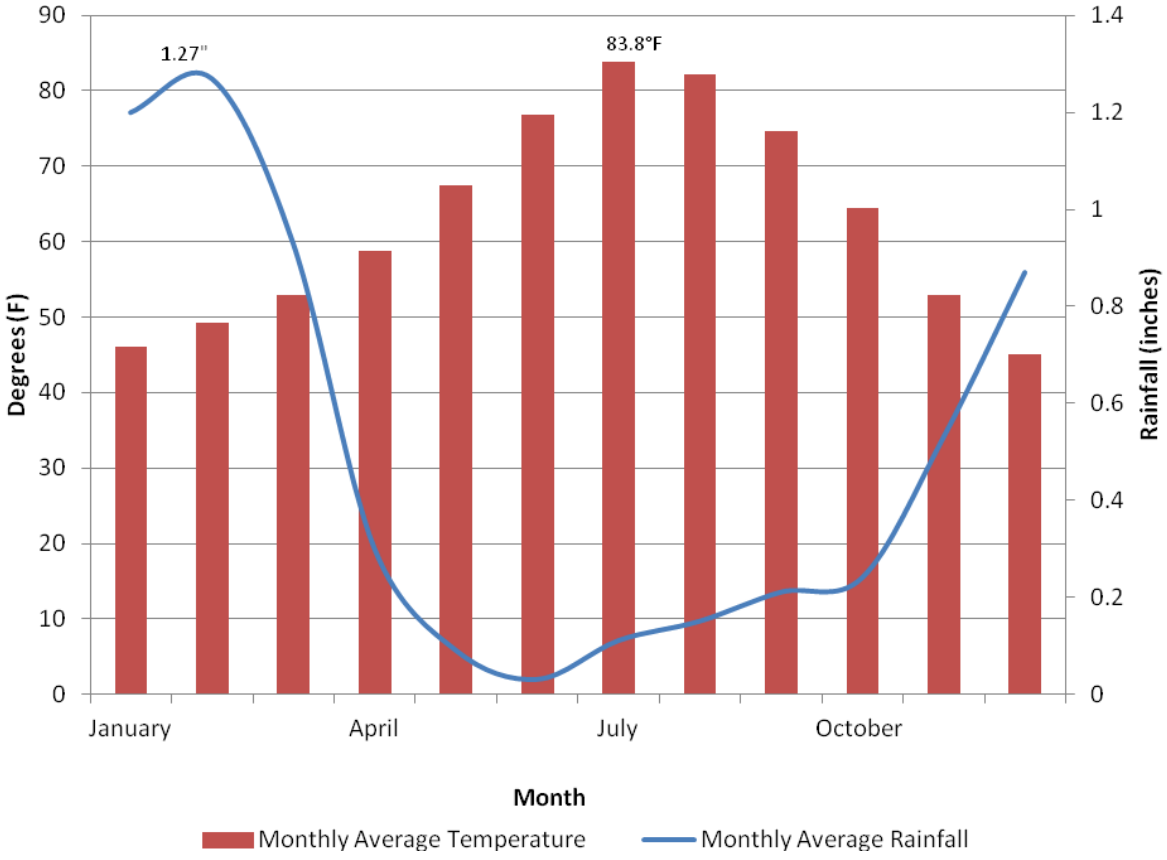
The City is located in the high desert with an elevation range of 2,300 to 4,000 feet above sea level. Its climate is semi-arid, which provides for warm, dry weather in the summer and mild cooler weather in the winter. Rainfall for the area is less than 6-inches annually, with about 75 percent occurring in December through March. The precipitation varies considerably from year to year, with a prolonged drought occurring from 1945 to 1964 and several shorter drought periods within the last ten years. Because precipitation occurs predominantly in the winter months, when landscaping and agricultural water demand is at the lowest, summer water demand is 3 to 5 times that of the winter months.

Table 3.1-2: Climate Characteristics

Month	Monthly Average Rainfall (inches)	Average Min. Temperature (ºF)	Average Max. Temperature (ºF)	Monthly Average Temperature (ºF)	Average Pan Evaporation (inches)	Monthly Average ETo (Zone 17) (inches per month)
January	1.2	34.2	57.8	46.0	0.00	1.86
February	1.27	37.1	61.2	49.2	4.65	2.80
March	0.93	41.0	64.7	52.9	6.45	4.65
April	0.3	46.3	71.3	58.8	9.97	6.00
May	0.09	55.1	79.9	67.5	13.59	8.06
June	0.03	63.8	89.9	76.9	15.33	9.00
July	0.11	69.8	97.7	83.8	17.21	9.92
August	0.15	68.0	96.4	82.2	16.0	8.68
September	0.21	60.3	89.0	74.7	11.83	6.60
October	0.24	50.3	78.5	64.4	8.28	4.34
November	0.53	40.2	65.7	53.0	4.76	2.70
December	0.87	32.9	57.2	45.1	3.52	1.86
Annual Total/Averages	5.93	49.9	75.8	62.9	111.59	66.50
Source: Western Regional Climate Center; Mojave, CA Station 045756						

The extreme high temperatures often exceed 100 degrees Fahrenheit from May through September. Because of its high desert location, humidity levels are very low and it is often windy. This gives California City one of the state's highest pan evaporation and reference evapo-transpiration (ET_o) rates. The high evaporation and ET_o rates result in significantly higher water usage for landscape irrigation than other areas in California.

Figure 3.1-2: Climate Characteristics



3.2 Service Area Population

Legal Requirements:

> *§10631(a) (Describe the service area) current and projected population…The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier…*
>
> *§10631(a) …(population projections) shall be in five-year increments to 20 years or as far as data is available.*
>
> *§10631(a) Describe…other demographic factors affecting the supplier's water management planning.*

The population of California City was consistently near 3,000 residents from 1965 to 1980. From 1980 to 1990, the population grew to approximately 6,000. From 1990 to 2000, the population continued to increase at a similar rate, reaching 8,385 citizens. Since 2000 the rate of growth has increased slightly to a total population of 14,120 (2010 Census). Most growth was a result of employment opportunities at Edwards Air Force Base, Rio Tinto (Borax) Mine, Mojave Air and Space Port and the California City Correctional Center (CCC). The Population growth over the past 5 years has experienced both positive and negative growth rates. The Population in 2015 is below the 2008-2009 populations.

Table 3.2-1: Historical Population 2000 to 2015

Table 3.2-1 Historical Population 2000 to 2015						
Calendar Year	Service Area Total Population	Unserved Population	Distribution System Population	Distribution System Population Change	Distribution System %Population Change	10 Year Average % Population Change
2000	8385	0	8385		0	
2001	9203	0	9203	818	9.8%	
2002	10806	0	10806	1603	17.4%	
2003	11138	0	11138	332	3.1%	
2004	11301	0	11301	163	1.5%	
2005	11687	0	11687	386	3.4%	
2006	12528	0	12528	841	7.2%	
2007	13705	0	13705	1177	9.4%	
2008	14556	0	14556	851	6.2%	
2009	14338	0	14338	-218	-1.5%	
2010	14120	0	14120	-218	-1.5%	5.5%
2011	12820	0	12820	-1300	-9.2%	3.6%
2012	13397	0	13397	577	4.5%	2.3%
2013	13421	0	13421	24	0.2%	2.0%
2014	13466	0	13466	45	0.3%	1.9%
2015	14233	0	14233	767	5.7%	2.1%
Note: Population growth has been low or negative the last few years.						
The City will use a conservative 1% growth rate to project future water demands.						

The California City area has had a reduction in population from 2009 to 2015. Although the growth rate may be negative this UWMP will uses a 1.5% growth rate based on the 2015 population of 14,233. Using this, perhaps inflated, population growth forecast for future water demand requirements will provide for conservative planning. See table 3.2-2 for projected populations

Table 3.2-2 (UWMPGB 3-1): Population-Current and Projected

Table 3-1 Retail: Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040*(opt)*
	14,233	15,333	16,518	17,795	19,170	22,247
NOTES: 1% growth is realistic. 1.5% was used and is considered conservatively optimistic. Based on the 2015 Population of 14,233.						

3.3 Water Sources Imported and Ground Water

Legal Requirements Water Sources:

> *§10631(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

UWMPA requirements state that the water supplier must describe their existing and planned water supply sources for the next 20 years. The following description includes information such as water rights, an overdraft summary, any adjudication decrees and other pertinent information from the ground water management plan.

3.3.1 Water Supply Facilities

The City currently utilizes six groundwater wells and surface water purchased from AVEK for its water supply. The City's ground water wells currently have the capability to produce 5,100 gallons per minute. (see Tables 3.3-1, 3.3-2 below). The City has 6 primary wells. All production wells are disinfected with sodium hypochlorite and meet all drinking water quality standards set by Federal and State health agencies. Well #03 (700 gpm) runs on natural gas and is available in the event of a power outage. The wells are located in the First Community. Water levels in the wells range from 339 to 497 feet below ground surface and the pumping capacities are as shown in Table 3.3-1. Future plans include the re-construction or re-habilitation of Well 01 (550 gpm) and Well 11 (300 gpm).

Table 3.3-1: Water Sources Production Capacity Summary

Table 3.3-1 Water Sources Well Production Capacity Summary					
	Water Source Type	Water Source Name	Water Source gpm	Water Source Annual Capacity	Water Source Summer 1 Month Capacity
	Well	Well #02	950	499.32	41.61
	Well	Well #03	700	367.92	30.66
	Well	Well #10	750	394.20	32.85
	Well	Well #14	850	446.76	37.23
	Well	Well #15	1000	525.60	43.80
	Well	Well #16	850	446.76	37.23
2018	Well	Well #01	550	289.08	24.09
2019	Well	Well #11	300	157.68	13.14
	Surface	AVEK		348.66	87.17
		TOTAL Well	5,950	3,127.32	260.61
		TOTAL	5,950	3,475.98	347.78
NOTES: Volume in MG (Millions of gallons). Well capacities are based on 100% uptime a theoretical maximum production capacity. The AVEK 1 month Summer capacity is based on the City taking It's 1 year allotment over a 4 month period.					

Water supply for the Wonder Acres area of California City is purchased from AVEK but "wheeled" through the MPUD system. The City pays a "wheeling" charge for water delivered by MPUD. AVEK water delivered from MPUD is used exclusively in the Wonder Acres area, near Highway 14 and California City Boulevard. Currently, there are 38 service connections with water consumption remaining relatively consistent. Discussions with the General Manager of the Mojave Public Utilities District in 2000 predicted increased water supply to this community would not be a problem. The current agreement limits this water supply to a peak of 500 gpm. A 1978 agreement provides for delivery of AVEK water that is transferred to California City via MPUD's infrastructure.

3.4 Water Distribution System

3.4.1 Water lines and Customer Connections

The City incorporated area is 203 square miles with approximately 4,430 active service connections. The City maintains approximately 313 miles of water main lines ranging in size from 4 to 16- inches in diameter and a 20-inch transmission line connects the City wells to the reservoirs located in the foothills. The city has 7 different pressure zones to maintain pressure ranges between 50 and 100 psi. One zone has pressures as high as 130 psi and the city is planning on installing a PRV to reduce this pressure. Most residential and commercial connections have pressure reducing regulators. Customer meters are typically located on the property line and the average length of customer service lines is 25 feet.

3.4.2 Water Meters

All production sources are metered and the meters are considered highly accurate. Customer meters are also considered highly accurate as most of them have been installed/replaced/upgraded since 2009. A portion of the customer meters were tested each year to confirm accuracy.

3.4.3 Water Storage

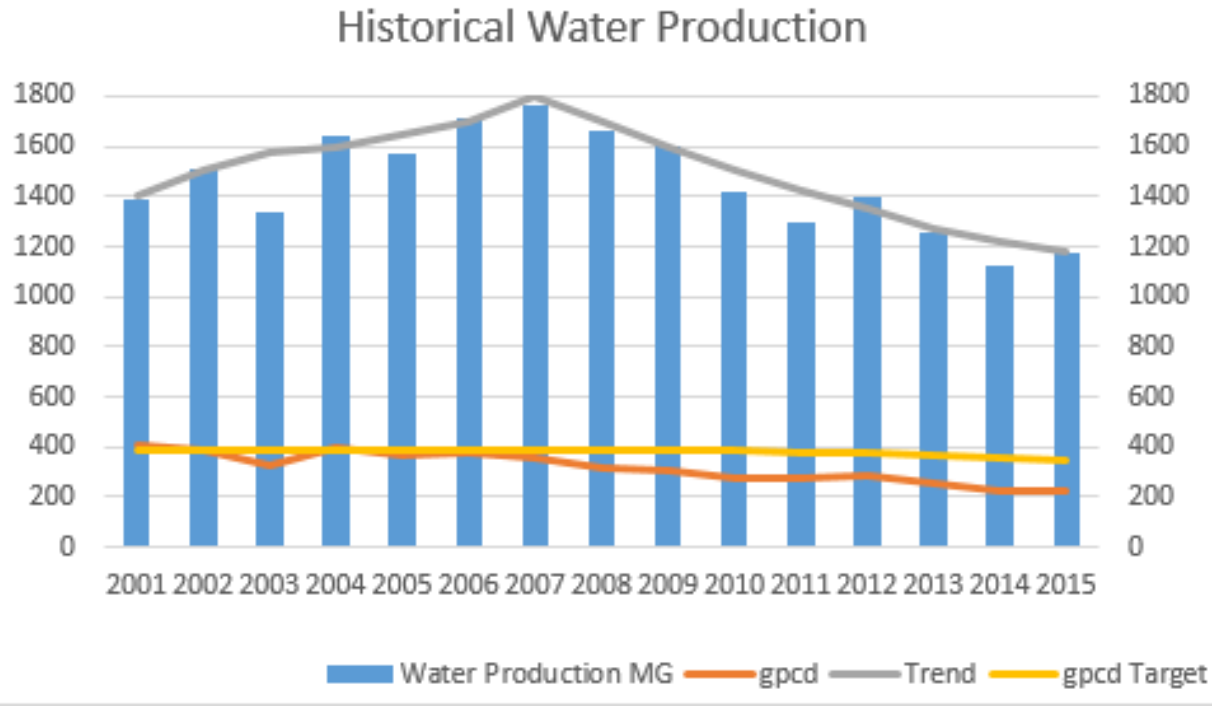
The City maintains 5 above ground water storage reservoirs totaling 5.85 MG. These tanks are Reservoir B1 (2.5 MG), Reservoir C2 (1 MG), Reservoir D3 (1 MG), Reservoir E4 (1 MG) and Rancho Reservoir (0.350 MG).

4 SYSTEM DEMANDS

4.1 Current and Historical Water Demands

From 2001 thru 2007 water Demand increased from 1,384 mg up to 1764 mg per year. From this data and population data the gpcd baseline was established at 389 with a 350 gpcd 2015 target (See section 2.2). In 2015 the City produced 1175 MG of water with a population of 14,233 giving a 226 gpcd 124 gpcd below the 350 target .

Figure 4.1-1: Historical Water Production and gpcd



As illustrated above, the City's water use has decreased from 2007 to the present and the actual gpcd has been lower than the Target gpcd.

In 2015 the city produced 1175 MG of water. The City Delivered 804.5 MG. This indicates a water loss of 370 MG per year or 31.5% of water production. See table 4.1-1 below

Table 4.1-1(UWMPGB 4-1): Demands for Potable and Raw Water 2015

Table 4-1 Retail: Demands for Potable and Raw Water - Actual			
Use Type *(Add additional rows as needed)*	2015 Actual		
Drop down list *May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool*	Additional Description *(as needed)*	Level of Treatment When Delivered *Drop down list*	Volume
Single Family	Single and Multi Family	Drinking Water	346
Commercial	Commercial and Industrial	Drinking Water	458
Losses	System Water Losses	Drinking Water	370
		TOTAL	1,175
NOTES:			

4.2 Baselines and Targets

The City used 389 gpcd and the 80 percent reduction method to establish an interim target for 2015 of 350 gpcd and the 2020 target of 311 gpcd. The target method used was as per CWC 10608.20(b)(1) “Eighty percent of the urban retail water supplier’s baseline per capita daily water use.” (311 gpcd is 80% of 389 gpcd the 10 year baseline). (see also table 5.2-3 below).

4.3 Water Demands

Legal Requirements:

§10631(e)(1) Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:

(A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; (I) Agricultural.

§10631(e)(2) The water use projections shall be in the same 5-year increments to 20 years or as far as data is available.

§10631.1(a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

As illustrated below, the City's water use has been fairly constant from 2010 to 2015 while gpcd has been on the decline. From 2010 to the present water production, and gpcd, have decreased significantly as the city has focused on gross demand reducing measures, controlling the water system to avoided overpressure and blowouts, and by identifying and mitigating system leakage.

Table 4.3-1: Historical System Water Demands and Daily Per Capita Water Use

Table 4.3-1 Historical System Water Demands And Daily Per Capita Water Use-2000 to 2015						
Calendar Year	Service Area Total Population	Unserved Population	Distribution System Population	Annual system gross water used (mgy)	Annual daily per capita use (gpcd)	Base & Target(gpcd)
2000	8385	0	8385	1383	452	
2001	9203	-448	9651	1383	393	
2002	10806	-103	10909	1513	380	
2003	11138	1003	10135	1335	361	
2004	11301	810	10491	1641	429	
2005	11687	421	11266	1573	383	
2006	12528	225	12303	1714	382	
2007	13705	453	13252	1764	365	
2008	14556	985	13571	1664	336	
2009	14338	1155	13183	1598	332	
2010	14120	0	14120	1423	276	389
2011	12820	0	12820	1295	277	381
2012	13397	0	13397	1401	287	373
2013	13421	0	13421	1254	256	366
2014	13466	0	13466	1125	229	358
2015	14233	0	14233	1175	226	350
Note: The 226 gpcd achieved in 2015 exceeded the 311 gpcd 2015 target.						
The City is on track to achieve the 80% reduction, a 311 gpcd, by the year 2020						

In 2015 the city produced 1175 MG of water. The City Delivered 804.5 MG. This indicates a water loss of 370 MG per year or 31.5% of water production. See table 4.3 -1 above and 4.3-2 below.

Table 4.3-2 (UWMPGB 4-1): Water Deliveries – 2015

Table 4-1 Retail: Demands for Potable and Raw Water - Actual			
Use Type *(Add additional rows as needed)*	2015 Actual		
Drop down list *May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool*	Additional Description *(as needed)*	Level of Treatment When Delivered *Drop down list*	Volume
Single Family	Single and Multi Family	Drinking Water	346
Commercial	Commercial and Industrial	Drinking Water	458
Losses	System Water Losses	Drinking Water	370
		TOTAL	1,175
NOTES:			

4.4 Water Demand Projections

Legal Requirements:

> *§10631(k) Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).*

The population growth data summarized in Table 4.4-1 was used to estimate the future water use within the City. The distribution system population in 2015 was 14,233 and is projected to reach 22,247 by 2040. This is based on a 1.5% growth rate which is conservatively high.

The following table shows the projected water demand from 2020 through 2040 in MG (millions of gallons) per year. This is based on the projected populations and achieving the 2020 target of 311 gpcd then continuing to reduce this number by 2 gpcd per year thru 2040. The City notes that the required 2020 80% reduction to a 311 gpcd is the required goal and after the target is achieved, the City will then voluntarily continue to try and improve its water efficiency thus reducing gpcd as best practices dictate.

Table 4.4-1: Projected Water Demand - 2015 to 2040

Table 4.4-1 Projected Water Demand - 2015 to 2040					
Calendar Year	Service Area Total Population	Unserved Population	Distribution System Population	Targets and projected (gpcd)	Annual system gross water used (mgy)
2015	14233	0	14233	350	846
2020	15333	0	15333	311	1741
2025	16518	0	16518	301	1815
2030	17795	0	17795	291	1890
2035	19170	0	19170	281	1966
2040	22247	0	22247	271	2201
Note: 350 gpcd is the 2015 iterum target. 311 gpcd is the 2020 80% reduction target.					
These numbers are based on gross water production that include system losses.					

The table 4.4-2 below illustrate the projected water demand from 2020 through 2040 in MG per year based on sector. The city is fully metered. The sector amounts of water usage are based on future population projections, target reductions in gpcd, and the current sector percentage as per current utility metered water usage. The sector breakdown is Single Family and Multi Family 39%, Commercial is 29.5%, and the Losses 31.5% making up the 100% total water usage. It is not anticipated that future growth will make significant shifts in sector percentages.

Table 4.4-2 (UWMPGB 4-2): Gross Demands for Potable and Raw Water- Projected

Table 4-2 Retail: Demands for Potable and Raw Water - Projected						
Use Type *(Add additional rows as needed)*	Additional Description *(as needed)*	Projected Water Use *Report To the Extent that Records are Available*				
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		2020	2025	2030	2035	2040-opt
Single Family	Single and Multi Family	679	708	737	767	859
Commercial	Commercial and Industrial	514	535	558	580	649
Losses		548	572	595	619	693
TOTAL		1,741	1,815	1,890	1,966	2,201
NOTES:						

Future water demands are illustrated above in Table 4.4-2 with the losses included. System loss are currently at approximately 31.5%. All future water demands illustrated above are based on continues improvements by achieving the 2020 target of 311 gpcd and then continuing to reduce water demand by 2 gpcd per year as illustrated in Table 4.4-1 above. These gpcd targets will be achieved by reducing water consumption utilizing the Demand Management Measures (DMMs) (see section 9), improving production efficiency, reducing system losses, and other management methods that become apparent as the city actively matches water sources and production with demand. Available resources will be focused on the methods which are calculated to provide the greatest reduction in lower gpcd with compared to the cost to implement.

Table 4.4-3 (UWMPGB 4-3): Total Water Demands

Table 4-3 Retail: Total Water Demands						
	2015	2020	2025	2030	2035	2040 *(opt)*
Potable and Raw Water *From Tables 4-1 and 4-2*	1,175	1,741	1,815	1,890	1,966	2,201
Recycled Water Demand* *From Table 6-4*	0	0	0	0	0	0
TOTAL WATER DEMAND	1,175	1,741	1,815	1,890	1,966	2,201
**Recycled water demand fields will be blank until Table 6-4 is complete.*						
NOTES: For Supply and Demand of Recycled water 2015-2040 see Table 6.5-6						

As illustrated in Table 4.4-3 above total future water demands does not include recycled water. Potable water and recycled water will be handled separately and the projections for recycled water can be found in table 7.1-1-ADR (UWMPGB 7-2b). The City currently utilizes all available WWTP influent flow during the summer months for golf course irrigation as such the demand will always matches available supply see Table 6.5-6. If these numbers are included in the above Table 4.4-3 (UWMPGB 4-3) they also get propagated to Table 7.1-2 (UWMPGB 7-2) masking the real issue of ensuring that the total potable water supply available is greater than total potable water demand. For this reason, recycled water demand has been forced to zero using the other row in Table 6.1-4 (UWMPGB 6-4) but are included in Table 6.5-6.

4.5 Water Losses

Table 4.5-1 (UWMPGB 4-4): 12 Month Water Loss Audit Reporting

Table 4-4 Retail: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss*
01/2014	389.117
** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.*	
NOTES:	

The Following Table 4.5-2 contains other data from the AWWA Worksheet

Table 4.5-2: AWWA Water Loss Worksheet Information

Table 4.5-2: AWWA Worksheet Information	
Data	Value
Year	2014
Water Supplied Own Sources MG:	1,112.79
Water Supplied Imported MG:	11.897
Total Water Supplied MG:	1,124.69
Consumption Billed Metered MG:	721.509
Consumption UnBilled UnMetered MG:	14.059
Total Authorized Consumption MG:	735.568
Water Losses MG:	389.117
Apparent Unauthorized ConsumptionMG:	2.812
Apparent Metering inaccuracies MG:	0
Apparent Data Handling Errors MG:	1.804
Total Apparent Losses MG:	4.615
Real Water Losses MG:	384.502
Water Losses MG:	389.117
Non-Revenue Water MG:	403.176
Lenth of Mains Miles:	313.5
Number of Connections:	5000
Connection Density:	16
Meters Curbside:	YES
Average Operating Pressure psi:	65
AWWA Audit Score:	68/100
NOTES:	

4.6 Planned Future City Development

Legal Requirements:

§10910(a) Any city or county that determines that a project, as defined in section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.

§10912 For the purpose of this part, the following terms have the following meanings:

§10912(a) "Project" means any of the following:

(1) A proposed residential development of more than 500 dwelling units.

(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.

(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.

(4) A proposed hotel or motel, or both, having more than 500 rooms.

(5) A proposed industrial, manufacturing or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.

(6) A mixed-use project that includes one or more of the projects specified in this subdivision.

(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

At this time the only significant planned potential developments are indoor medical marijuana cultivation and CoreCivic (Correctional/Institutional Facility) expansion. These projects are in process and have been approved by the City. The City has a very large inventory of improved subdivided residential lots where houses can be built upon receipt of a building permit. These lots are expected to be built out at the rate of normal population growth.

4.6.1 Water Savings and Low Income Projected Water Demands

Future water projections include water savings as they are based on reducing gpcd by 2 gpcd per year through several water saving management methods the city is using. Regarding Low Income, the City is located in rural California were typically low income, very low income, moderate income, and higher income residence and homes are mingled together throughout the city. The city does not solicit income information. Low income projections are included in the single and multi-family dwelling line in Table 4.4-2 above.

Table 4.6-1 (UWMPGB 4-5): Inclusion in Water Use Projections

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) *Drop down list (y/n)*	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc... utilized in demand projections are found.	Page 29
Are Lower Income Residential Demands Included In Projections? *Drop down list (y/n)*	Yes
NOTES:	

4.7 Water Use Reduction Plan

Legal Requirements:

> *CWC§10608.26 Urban wholesale water suppliers shall include in the urban water management plans . . . an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part (10608.36). Urban retail water suppliers are to prepare a plan for implementing the Water Conservation Bill of 2009 requirements and conduct a public meeting which includes consideration of economic impacts.*

Future water demands are illustrated above in Table 4.4-2 with the losses separated out. System loss are currently at approximately 31.5%. All future water demands illustrated above are based on continues improvements by achieving the 2020 target of 311 gpcd and then continuing to reduce water demand the gpcd by 2 gpcd per year as illustrated in Table 4.4-1 above. These gpcd targets will be achieved by reducing water consumption utilizing the Demand Management Measures (DMMs) (see section 9), improving production efficiency and utilization, reducing system losses, and other management methods that become apparent as the city moves forward. Available resources will be focused on the methods which are calculated to provide the greatest return or water savings compared with cost of implementation.

5 BASELINES AND TARGETS (gpcd)

Legal Requirements:

> *§10608.20(e) An urban retail water supplier shall include in its urban water management plan…due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.*

The Water Conservation Bill of 2009 (SBX7-7) that was enacted in November of 2009. To increase water use efficiency, that requires urban water suppliers reduce the statewide average per capita daily water consumption by 20% by December 31, 2020. The Bill also requires urban water suppliers to report their base line daily per capita water use, Urban water use target, interim water use target, and compliance daily per capita water use.

5.1 Baseline

The base line daily per capita water use was calculated to be 389 gallons per-capita per day (gpcd) (see table 4.2-2 below). As per the DWR's methodology this was a 10 year average from 2001 to 2010.

Population data for the California City area was obtained from the Department of Finance web site www.dof.ca.gov.

Table 5.1-1: Base Daily Per Capita Water Use –5 Year Average

Table 5.1-1 Base Daily Per Capita Water Use-5 Year Average						
Sequence	Calendar Year	Service Area Total Population	Unserved Population	Distribution System Population	Annual system gross water used (mgy)	Annual daily per capita use (gpcd)
1	2004	11301	973	10328	1641	435
2	2005	11687	807	10880	1573	396
3	2006	12528	1066	11462	1714	410
4	2007	13705	1630	12075	1764	400
5	2008	14556	1836	12720	1664	358
					Average Base Daily Per Capita Water Use:	400

The above table 5.1-1 is data from 2004 through 2008, a five year range ending between the end of 2007 and 2010, summarizes that data used to calculate the 5 year average baseline of 400 gpcd. The 2020 target (311 gpcd) must be 20% less than the 10 year average (389 gpcd) as calculated in Table 5.1-2 below and is required to be below (380 gpcd) 95% of the 5 year 400 gpcd.

Table 5.1-2: Base Daily Per Capita Water Use –10 Year Average

Table 5.1-2 Base Daily Per Capita Water Use-10 Year Average						
Sequence	Calendar Year	Area Total Population	Unserved Population	Distribution System Population	Annual system gross water used (mgy)	daily per capita use (gpcd)
1	2001	8385	-448	8833	1383	429
2	2002	9203	-103	9306	1513	445
3	2003	10806	1003	9803	1335	373
4	2004	11138	810	10328	1641	435
5	2005	11301	421	10880	1573	396
6	2006	11687	225	11462	1714	410
7	2007	12528	453	12075	1764	400
8	2008	13705	985	12720	1664	358
9	2009	14556	1155	13401	1598	327
10	2010	14120	0	14120	1631	316
				Average Base Daily Per Capita Water Use:		389

5.2 Targets

The City used 389 gpcd and the 80 percent method to establish an interim target for 2015 of 350 gpcd and the 2020 target of 311 gpcd. The target method used was as per CWC 10608.20(b)(1) “Eighty percent of the urban retail water supplier’s baseline per capita daily water use.” (311 gpcd is 80% of 389 gpcd the 10 year baseline). Interim targets are also calculated based on a 2% per year reduction, 381 in 2011 2%, 373 2012 4%, and so on. (see also table 5.2-1 below).

Table 5.2-1(UWMPGB 5-1): Baseline and Targets Summary

Table 5-1 Baselines and Targets Summary *Retail Agency or Regional Alliance Only*					
Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	*2001*	*2010*	*389*	*350*	*311*
5 Year	*2004*	*2008*	*400*		
*All values are in Gallons per Capita per Day (GPCD)					
NOTES:					

The City’s 2020 target is 311 gpcd. The City used 80% of the 10 year base line of 389 gpcd as per CWC 10608.20(b)(1) “Eighty percent of the urban retail water supplier’s baseline per capita daily water use.” 311 gpcd is also below (317 gpcd) 95% of 400 gpcd the 5 year base line (See table 5.2-1 above). Interim targets are also calculated

based on a 2% per year reduction, 381 in 2011 2%, 373 2012 4%, and so on. (see also table 5.2-2 below).

Table 5.2-2: Daily Per Capita Water Use 2011- 2015 -> 2020

Table 5.2-2 Daily Per Capita Water Use-2011 to 2015 -> 2020						
Calendar Year	Service Area Total Population	Unserved Population	Distribution System Population	Annual system gross water used (mgy)	Annual daily per capita use (gpcd)	Base & Target(gpcd)
2010	14120	0	14120	1423	276	389
2011	12820	0	12820	1295	277	381
2012	13397	0	13397	1401	287	373
2013	13421	0	13421	1254	256	366
2014	13466	0	13466	1125	229	358
2015	14233	0	14233	1175	226	350
2016						342
2017						335
2018						327
2019						319
2020						311
Note: The 226 gpcd achieved in 2015 exceeded the 350 gpcd 2015 target.						
With the current gpcd the City has also achieve it's 2020 targe of 80% reduction.						

5.3 Target Compliance

The 2020 per capita water use target is 311 gpcd. The 2015 interim target is 350 gpcd. The city achieved 226 gpcd in 2015 (See table 5.2-2 above) exceeding the interim target of 350 by 124 gpcd. The City is on track to achieve or exceed the required 80% reduction a 311 gpcd by the year 2020.

Table 5.3-1(UWMPGB 5-2): 2015 Target Compliance (gpcd)

Table 5-2: 2015 Compliance *Retail Agency or Regional Alliance Only*								
Actual 2015 GPCD*	2015 Interim Target GPCD*	Optional Adjustments to 2015 GPCD Enter "0" if no adjustment is made *From Methodology 8* Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*	Adjusted 2015 GPCD*	2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
226	350				0	226	226	Yes
**All values are in Gallons per Capita per Day (GPCD)*								
NOTES:								

6 SYSTEM WATER SUPPLY SOURCES

6.1 Water Supply Facilities

Legal Requirements:

> *§10631(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

UWMPA requirements state that the water supplier must describe their existing and planned water supply sources for the next 20 years. The following description includes information such as water rights, an overdraft summary, any adjudication decrees and other pertinent information from the ground water management plan.

The City currently utilizes groundwater wells and surface water purchased from AVEK for its water supply. The City's groundwater wells currently have the capability to produce 5,100 gallons per minute (gpm) and by 2020 this amount will be increased to 5,950 gpm giving an annual maximum water production capacity of 3,127,32 MG. see Table 3.3-1. The City currently has six primary wells and all production wells are disinfected with sodium hypochlorite and meet all drinking water quality standards set by Federal and State health agencies. The wells are located in the First Community. Water levels in the wells range from 339 to 497 feet below ground surface and the pumping capacities range from 700 to 1000 gpm. Future plans call for the construction of 2 new wells, Well #01 and Well #11 to be brought on line in 2018-2019 in the Fremont Basin. The system also incorporates 5 above ground storage reservoirs totaling 5.71 MG. Table 6.1-1 below shows historical water sources from 2010 thought 2015 and shows that the current capacity utilization is between 35% to 40% of the total maximum available production capacity.

Table 6.1-1: Historical System Water Sources 2000 – 2015

Table 6.1-1 Historical System Water Sources 2010 - 2015											
Calendar Year	Well #02	Well #03	Well #10	Well #14	Well #15	Well #16	AVEK	Total	Well Total	Well %	% of Well Maximum 2,680.56 MG
2010	88.67	0.00	289.76	131.86	323.25	246.02	343.63	1423.20	1079.57	75.9%	40.3%
2011	139.36	0.00	282.64	0.00	137.89	255.59	479.61	1295.10	815.48	63.0%	30.4%
2012	187.67	0.00	213.61	170.81	183.36	224.84	420.70	1400.99	980.29	70.0%	36.6%
2013	417.35	0.00	76.13	176.58	84.59	103.68	395.59	1253.92	858.33	68.5%	32.0%
2014	348.43	0.00	52.57	65.89	342.44	303.46	11.90	1124.69	1112.79	98.9%	41.5%
2015	121.19	0.00	133.94	0.04	340.61	367.29	212.10	1175.17	963.08	82.0%	35.9%
Average	217.11	0.00	174.77	90.86	235.36	250.15	310.59	1278.84	968.26	75.71%	36.12%
1 yr Capacity	499.32	367.92	394.20	446.76	525.60	446.76	348.66	3029.22	2680.56	88.49%	100.00%
Note: 1 Year capacity (MG) on wells is based on pumping capacity (Wells are not limited by water rights).											
1 year capacity (MG) on AVEK is based on the AVEK 2015 UWMP and the 2020 projected allocation 1070 af -> 348.66 MG.											

The City has the ability to increase or decrease the amount of water purchased from AVEK, depending on demand, according to the 2010 UWMP the maximum amount is about 1,700 afy or 554 MG. AVEK indicated that the water may be limited during a multi-year drought. The AVEK supply is also limited by the reliability of the State Water Project

water. The 2015 AVEK UWMP projected that in 2020 California City allocations would be 1070 afy or 348.66 MG. This brings the total one year current available capacity to 3029.22 MG. (see Table 6.1-1 above)

California City utilizes 3 water sources: above in table 6.1-1 groundwater, and imported surface water are shown. Imported surface water can be purchased from AVEK through standing agreements with the City. Additional supplies are available from AVEK and increased groundwater pumping is also available. Recycled water is also an available water source. Recycled Water will be discussed in section 6.5 Below. As the City grows and new homes are connected to the sewer system, additional recycled water will be produced available.

The Wonder Acres area of California has a separate water system. Water for this area is purchased from AVEK but "wheeled" through the MPUD system. The City pays a "wheeling" charge for water delivered by MPUD. AVEK water delivered from MPUD is used exclusively in the Wonder Acres area, near Highway 14 and California City Boulevard. Currently, there are 38 service connections with water consumption remaining relatively consistent. Discussions with the General Manager of the Mojave Public Utilities District indicated that increased water supply to this community would not be a problem. The current agreement limits this water supply to a peak of 500 gpm. A 1978 agreement provides for delivery of AVEK water that is transferred to California City via MPUD's infrastructure.

The City has significant more water rights than they currently use. Further discussion of the ground water will be covered in section 6.2. The City ground water (well) production is not limited by water right but by pumping capacity. Table 6.1-1 above show a total well capacity of 2680.56 MG This capacity is a maximum capacity as it is based on wells running with 100% uptime. Table 6.1-2 below is a review of water producing capacities based on a worst-case month. The worst-case month each year occurs when water demand is maximum and wells operated to meet this demand. From 2010 thru 2015 maximum demand occurred mostly in July and two occurrences happened in August. The one month total capacity of 310.55 MG is based on the typical or city receiving its total allotment over 4 months of the year or 25% of the AVEK allotment in one month and well production capacity is based on 100% uptime for a 1 month period. 100% uptime/runtime on wells for one or two months is achievable if proper maintenance and repairs are performed during shoulder less use months. However, it is not anticipated that such runtimes will be required for this UWMP report horizon of 2040.

Table 6.1-2: Historical System Water Sources Worst Case Month 2010 – 2015

Table 6.1-2 Historical System Water Sources Worst Case Month													
Calendar Year	Well #02	Well #03	Well #10	Well #14	Well #15	Well #16	AVEK	1 Month Total	1 Year Total	1 Mth % of Year Total	1 Mth Well Total	1 Month Well %	1Month %Capacity Utilization (310 MG
2010 July	4.93	0.00	39.97	46.03	35.43	23.95	62.34	212.65	1423.20	14.9%	150.30	70.7%	68.5%
2011 August	32.31	0.00	39.05	0.00	26.17	20.00	57.96	175.48	1295.10	13.19	117.52	67.0%	56.5%
2012 July	20.66	0.00	12.58	40.60	39.57	17.37	50.00	180.78	1400.99	12.94	130.78	72.3%	58.2%
2013 July	35.10	0.00	27.07	29.65	0.37	23.83	60.60	176.61	1253.92	13.62	116.02	65.7%	56.9%
2014 July	40.21	0.00	20.60	22.13	38.86	22.71	2.63	147.15	1124.69	13.30	144.53	98.2%	47.4%
2015 August	33.29	0.00	7.08	0.00	28.82	31.12	44.43	144.74	1175.17	11.97	100.31	69.3%	46.6%
1 Yr Capacity	499.32	367.92	394.20	446.76	525.60	446.76	348.66		3029.22				
1 Mth Capacity	41.61	30.66	32.85	37.23	43.80	37.23	87.17	310.55		10.3%	223.38	71.9%	
Note: 1 year capacity for AVEK is based on the AVEK 2015 UWMP, Wells are based on maximum pumping capacity.													
1 Month Capacity: For AVEK is based on 150 ac-> 48.88 mg, For wells based on 1 month maximum pumping capacity .													

Table 6.1-2 shows capacity utilization is below 50% during worst case months for the past few years. In August of 2015 the city used 144.74 MG or 46.6% of the 310 MG available capacity.

For purposes of reviewing available capacity to meet the future water demands from 2020 through 2040 as summarized in table 4.4-4, a one month capacity of 347.78 MG (see table 3.3-1 above) will be used that includes the addition of Wells #01 in 2018 and Wells #11 In 2019. Water demand for one month is assumed at 13% of the years projected water demand a rounded approximate recent average value obtained from table 6.1-2 above.

Table 6.1-3: Demand Vrs Capacity 2020-2040 Worst-Case Month

Table6.1-3 Demand Vrs Capacity Worst-Case month 2020 - 2040					
	2020	2025	2030	2035	2040
Yr Demand	1741	1815	1890	1966	2201
1 Mth Demand	226	236	246	256	286
1 Mth Capacity	348	348	348	348	348
Excess Capacity	121	112	102	92	62
%Capacity Utiliz	65.1%	67.8%	70.6%	73.5%	82.3%
Note: 1 Month(Mth) demand is based on 13% of the year(Yr) demand.					
Projecting to 2040 indicates the system will be using 82% of capacity.					

Table 6.1-3 above shows that in 2040 the city will be using 82.3% of current water production capacity to meet the projected 1 month 286 MG demand that is 13% of the 2,201 MG projected annual demand. It is noted that 82.3% capacity utilization in 2040 is conservative and that for the foreseeable future, the City has excess production capacity that will handle system demands year around and during worst case summer demand months.

6.2 Groundwater

Legal Requirements:

§10631(b) (Is) groundwater…identified as an existing or planned source of water available to the supplier…

§10631(b)(1) (Provide a) copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

§10631(b)(2) (Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater.

§10631(b)(2) For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board.

§10631(b)(2) (Provide) a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.

§10631(b)(2) For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

§10631(b)(3) (Provide a) detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

§10631(b)(4) (Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

6.2.1 Groundwater Description and Management Plan

The City lies within the Fremont Valley Groundwater Sub-basin (FVGB) of the South Lahontan Hydrologic Study Area. The Sub-basin is identified as sub-basin 6-46 in the Department of Water Resources Bulletin 118. The basin is 523 square miles (334,720 acres) of which 203 square miles (129,920 acres) is located under California City proper. The Muroc Fault traverses the sub-basin, dividing it into two smaller sub-basins with California City on the north and Mojave on the south. The California City sub-basin (CCSB) contains approximately 142,451 acres (Stetson 2008) and potentially 1,382,000 acre-feet of storage capacity; however, estimates of the storage capacity range greatly with a high estimate of 5,700,000 acre- feet in 1955, when the basin was considered full. Within the City boundary, the FVGB groundwater storage was estimated at approximately 1,980,000 af in 1955 and 1,650,000 af in 2007 (Stetson 2008).

The CCSB is hydraulically connected to the Antelope Valley Groundwater Basin (AVGB) by the alluvial filled narrows between the Castle Butte and the Twin Buttes; groundwater is able to move between the two valleys in this area. There are several other faults in the sub-basin, Garlock Fault and El Paso Fault system, which run on the north and west side of the sub-basin, respectively, which act as a restrictive groundwater barrier on the west and northwest side of the sub-basin between the Tehachapi, Piute and El Paso Mountains and the FVGB.

The CCSB has one area of depression, the now-dry Koehn Lake. According to Stetson, groundwater in the sub-basin flows from the alluvial fans along the mountains towards this depression. This flow stems in part from the AVGB, which contributes up to 2,570 afy (Stetson 2008).The City, on average, pumps 3,300 acre feet (1075 MG) per year from the aquifer, which provides the customers with approximately 75 percent of their potable water supply.

The City of California City purchased all water rights based on an agreement/contract dated March 21, 1960 between Born Valley Water Development Company and Boron Valley Community Service District which later became California City Service District. California City owns the water right stated as follows “All water rights, all right, title and interest in and to all water in, on and underlying the surface of the land (herein referred to as “Water Rights”) within the boundaries of or which may subsequently flow into that area designated Area A (California City Proper 203 square miles). At that time the water right was producing 32,000 acre-feet (10,427 MG) 10.8 times more the current annual extraction rate of the city (964 MG). The city has 10.8 times more water right than they are currently pumping and at current maximum pumping capacity of (2680.56 MG) they could only utilize 25.7% of the owned water right.

California City, Mojave, and AVEK have now formed the FVGB IRWMG and are working on the IRWMP for the basin to protect their water rights from outside influences.

6.2.2 Groundwater Levels and Historical Trends

The average groundwater elevation in 2010, according to the USGS groundwater field data, was 297 feet, which is a decrease of approximately 29 feet from the groundwater elevation of 268 feet in 1953.

Currently California City, Mojave, and Cantil are the only major entities drawing significant quantities of water from the basin and California City is by far the largest. In 2016 California City pumped 1,179.89 MG (3620 acre-feet), Mojave pumped 152.20 MG (467 acre-feet), and Cantil pumped 2.43 MG (7.46 acre-feet). Basin Total 1,334.5 MG (4095 acre-feet) being extracted from the basin annually. The basin (Number 6-64) is approximately 523 square miles (334,720 acers) per the DWR Bulletin 118. Based on basin area (4,095 acre-feet/334,720 acers) X (12in/1ft) = 0.1468 inches (2.5%) of the 5.93 inches of the average rain fall each year would need to make it into the basin aquafer to maintain recharge. The Western Regional Climate Center; Mojave, CA Station 045756 indicates an annual total average rainfall of 5.93 inches. This along with the fact that the basin sustained 32,000 acre-feet, over 5 times more extraction, for 10 to 15 years during the 1960s early 1970s when the area was predominantly agricultural substantiate the fact that the current rate of extraction defiantly does not exceed the rate of recharge. And the basin is not in overdraft.

6.2.3 Sources of Recharge

Recharge in the California City sub-basin is derived from percolation of precipitation and runoff from surrounding watersheds. Additional recharge is realized from the subsurface flows from AVGB and Mojave sub-basin. The Muroc Fault acts as a partial barrier between the California City and Mojave sub-basins and CCSB, only allowing subsurface flow when the groundwater storage is in the Mojave sub-basin is high enough to crest the top of the fault, approximately 2,420 feet above sea level.

The estimates of groundwater recharge have historically ranged greatly; however, Stetson reports an average between 1945 to 2007 of 13,100 afy (4,269 MG) including percolation of precipitation within the basin limits, percolation of runoff from other watersheds, and subsurface inflows from the Mojave sub-basin and AVGB (Stetson 2008).

In addition to the natural recharge, California City performs intentional recharge efforts to offset their extraction from the aquifer. The City operates a wastewater treatment plant which produces recycled water. The recycled water is used, in part, for recharge via percolation ponds while the remainder is used for landscape irrigation. (See table 6.5-1 below)

6.2.4 Existing and Projected Groundwater Pumping

The City has historically relied on groundwater pumping for a large portion 75% of its water supply. (see table 6.1-1 above). This table also show the quantities of groundwater the City has pumped over the last six years with a maximum of 1,113 MG in 2014. 1,113 MG is around 41.5% of the total pumping capacity 2680.56 MG also shown in table 6.1-1 above.

The following tables show the quantities of groundwater the City has pumped in the last five years and anticipates what will be pumped through 2030.

Table 6.2-1 (UWMPGB 6-1): Groundwater Volume Pumped

Table 6-1 Retail: Groundwater Volume Pumped						
☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type *Drop Down List May use each category multiple times*	Location or Basin Name	2011	2012	2013	2014	2015
Add additional rows as needed						
Alluvial Basin	Fremont Valley	815.5	980.3	858.3	1112.8	963.1
	TOTAL	816	980	858	1,113	963
NOTES:						

Based on the water demand projections in Table 4.4-2 above, in 2040 the total demand is projected to be 2,201 MG the city will have 59.2% excess pumping capacity.(see table 6.2-2 below) The city has ample groundwater pumping capacity and water rights for the current forecasted future.

Table 6.2-2: Demand Vrs Capacity Groundwater Pumping 2020-2040

Table6.2-2 Demand Vrs Capacity Pumping 2020 - 2040					
	2020	2025	2030	2035	2040
Yr Demand	1741	1815	1890	1966	2201
Yr AVEK	349	349	349	349	349
Yr Pumped	1392	1466	1541	1617	1852
Pumping Capacity	3127	3127	3127	3127	3127
Excess Capacity	1735	1661	1586	1510	1275
%Capacity Utilization	44.5%	46.9%	49.3%	51.7%	59.2%
Note: Projecting to 2040 indicates the City will only be using 59.2 % of its total pumping capacity.					

6.3 Transfer or Exchange Opportunities

Legal Requirements:

§10631(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

The City routinely receives water from AVEK and MPUD, as discussed above. Table 6.2-1 above indicates that the plan is to receive 349 MG per year. AVEK water is more expensive for the city than pumping ground water. For this reason, the City intends to retain and maintain it's AVEK use and rights of use but will try to minimize it's use to minimize costs. In the event of an emergency, it is possible the City may be able to increase the water supply from one or both these agencies on a temporary basis. However, if the situation is drought-related, it is likely the water supplied from AVEK will be affected by the same situation and an increased supply to California City may not be possible. AVEK has in is currently developing water reservoir facility to mitigate the variability of the State Water Project supply. With only 59.2% pumping capacity projected though 2040, the City can easily increase its groundwater pumping and or implement restrictions on its customers to make sure demand does not exceed available supply.

6.4 Desalinated Water Opportunities

Legal Requirements:

> *§10631(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.*

6.4.1 Brackish Water and/or Groundwater Desalination

The ground water that the City relies on is not brackish or in need of desalination. If this were to change in the future, the City will consider this option.

6.4.2 Seawater Desalination

Due to the geographic location of the City, desalination of seawater for use by the City is not practical or economically feasible.

6.5 Recycled Water Opportunities

Legal Requirements:

§10633 Provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.

§10633(a) (Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

§10633(b) (Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

§10633(c) (Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

§10633(d) (Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

§10633(e) (Describe) the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

§10633(f) (Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

§10633(g) (Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

The City of California City owns and operates a 1.5 MGD extended aeration activated sludge tertiary treatment facility (WWTP) and all domestic sewer collection systems within the City limits. The collection systems are gravity fed and only receive domestic wastewater (no storm water runoff). Currently, approximately 30 percent of the City is served by the WWTP. The remaining area is served by onsite septic systems.

The existing California City Wastewater Treatment Facility is designed to treat an average flow of 1.5 MGD and peak flow of 3.0 MGD. Currently, the average influent flow is 0.8 MGD. The present treatment process includes an influent pump station, head works consisting of a Parshall flume, mechanical bar screen and sonic flow meter. Secondary treatment consists of one extended aeration activated sludge basin, (split into two cells) two clarifiers and a return activated sludge (RAS) waste activated sludge (WAS) pump station. The tertiary treatment facilities consist of filter influent pump station, a chemical mixing/flocculation tank, storage facilities for polymer, alum and chlorine, tertiary sand filters and sodium hypochlorite disinfection.

Sludge treatment and disposal consists of pumping WAS to 5 lined sand type sludge beds for dewatering and solar drying. The existing sludge drying beds have a total area of 15,000 square feet. Dried sludge is removed and disposed at the authorized site, currently a landfill.

During a normal recycled water year the city collects approximately 19% of total potable water production shown in table 6.5-1 or 220 MG. 75% of this water 165 MG is recycled and used for irrigation at the golf course. During winter months once storage basins are full, a percentage, around 1% or 2.2 MG must be diverted to percolation ponds. Approximately 24% or 52.8 MG is lost due to evaporation during processing. see Table 6.5-1 below for historical Recycled Water quantities and normal year quantities. Table 6.5-2 Summarizes the data for 2015.

Table 6.5-1: Recycled Water Historical 2010 – 2015

Table 6.5-1 Recycled Water Historical 2010 - 2015							
Year	Influent Flows MG	Pond Golf Course	Irrigation %	Percolation Ponds MG	Percolation %	Process Evaporation & Losses MG	Losses %
2010	250.722	131.911	52.6%	6.378	2.5%	112.433	44.8%
2011	201.649	138.225	68.5%	2.796	1.4%	60.628	30.1%
2012	193.411	146.458	75.7%	1.622	0.8%	45.331	23.4%
2013	175.769	141.684	80.6%	0.000	0.0%	34.085	19.4%
2014	218.83	163.743	74.8%	1.693	0.8%	53.394	24.4%
2015	225.186	166.750	74.0%	2.000	0.9%	56.436	25.1%
1 Yr Normal	220.000	165.000	75.0%	2.200	1.0%	52.800	24.0%
Note: all Units are MG Millions of Gallions, 1 Year Normal is based on recent approxamate averages rounded.							

Table 6.5-2 (UWMGB 6-2): Wastewater Collected Within Service Area in 2015

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015						
☐	There is no wastewater collection system. The supplier will not complete the table below.					
	Percentage of 2015 service area covered by wastewater collection system *(optional)*					
	Percentage of 2015 service area population covered by wastewater collection system *(optional)*					
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? *Drop Down List*	Volume of Wastewater Collected from UWMP Service Area 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? *Drop Down List*	Is WWTP Operation Contracted to a Third Party? *(optional)* *Drop Down List*
Add additional rows as needed						
California City	Metered	225	California City	California City	Yes	No
Total Wastewater Collected from Service Area in 2015:		225				
NOTES:						

Table 6.5-3 (UWMGB 6-3): Wastewater Treated and Discharged 2015

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015										
☐	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.									
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal *Drop down list*	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level *Drop down list*	2015 volumes			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Add additional rows as needed										
California City	Wastewater Treatment Facility	Seven percolation ponds	WDID: 6B150118001	Percolation ponds	No	Tertiary	225	2	167	0
						Total	225	2	167	0
NOTES:										

Table 6.5-4: Projected Wastewater 2020-2040

Table6.1-3 Projected Wastewater 2020 - 2040					
	2020	2025	2030	2035	2040
Potable Water Demand	1741	1815	1890	1966	2201
Waste Water Collected %	19%	19%	19%	19%	19%
Waste Water Collected MG	330.8	344.9	359.1	373.5	418.2
Process Losses 24%	79.4	82.8	86.2	89.6	100.4
Recycled Irrigation 75%	248.1	258.6	269.3	280.2	313.6
Percolation Ponds 2%	6.6	6.9	7.2	7.5	8.4
Note: volumes are in MG Millions of Gallons, Percentages are based on the history as shown in Table 6.5-1					

Table 6.5-5 (UWMPGB 6-4): Current Projected Recycled Water Beneficial Use

Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area								
☐	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.							
Name of Agency Producing (Treating) the Recycled Water:		California City						
Name of Agency Operating the Recycled Water Distribution System:		California City						
Supplemental Water Added in 2015								
Source of 2015 Supplemental Water								
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment *Drop down list*	2015	2020	2025	2030	2035	2040 (opt)
Agricultural irrigation								
Landscape irrigation (excludes golf courses)								
Golf course irrigation		Tertiary	167	248	259	269	280	314
Commercial use								
Industrial use								
Geothermal and other energy production								
Seawater intrusion barrier								
Recreational impoundment								
Wetlands or wildlife habitat								
Groundwater recharge (IPR)*		Tertiary	2	7	7	7	8	8
Surface water augmentation (IPR)*								
Direct potable reuse								
Other *(Provide General Description)*	Adjust to Zero for Tables 4-3,7-2		-169	-255	-266	-277	-288	-322
		Total:	0	0	0	0	0	0
**IPR - Indirect Potable Reuse*								
NOTES: Supply and Demand of Recycled water 2015-2040 is in Table 6.5-6								

For purpose of this 2015 UMMP the total value of projected recycled water in Table 6.5-5 (UWMPGB 6-4) above was zero with an adjustment in the Other use type. This was done to prevent the demand values from propagating into Table 4.4-3 (UWMPGB 4-3) and then into Table 7.1-2 (UWMPGB 7-2). Future Demand Projections. When recycled demand numbers are included in Tables 4.4-3 and 7.1-2 this required the recycled supply numbers must be included in Table 6.6-4 (UWMPGB 6-9) to offset the demand. The use of recycled water lowers water demand and thus lowers need supply. Having these numbers show up in Table 7.1-2 is in effect double counting water that has already been counted when produced. In the case of California City the recycled water demand will always match supply as Illustrated in Table 6.5-6 below. The use of recycled water lowers demand and thus lowers the need supply. Including recycled water number that are hidden in the supply and demand totals in Table 7.1-2 (UWMPGB 7-2) masks the real issue and purpose of this plan which is to ensure that city has sufficient potable water supply for meet the demand.

Table 6.5-6: Projected Recycled Water Supply and Demand

Table 6.5-6 Projected Recylced Water Supply and Demand						
	2015	2020	2025	2030	2035	2040 (Opt)
Supply totals	169	255	266	277	288	322
Demand totals	169	255	266	277	288	322
Difference	0	0	0	0	0	0
NOTES:						

Table 6.5-7 (UWMPGB 6-5):2010 UWMP 2015 Recycled Water Use Projected/Actual

Table 6-5 Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual			
☐	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.		
Use Type		**2010 Projection for 2015**	**2015 Actual Use**
Agricultural irrigation			
Landscape irrigation (excludes golf courses)			
Golf course irrigation		504	167
Commercial use			
Industrial use			
Geothermal and other energy production			
Seawater intrusion barrier			
Recreational impoundment			
Wetlands or wildlife habitat			
Groundwater recharge (IPR)		247	2
Surface water augmentation (IPR)			
Direct potable reuse			
Other	*Process Losses*	171	57
Total		922	226
NOTES: The total Influent Flow Collected in 2015 was 226 MG			

(UWMPGB 6-5): 2010 UWMP Recycled Water Use Projected/Actual

Currently, the only permitted sites for use of the secondary and tertiary treated effluent are the 8 existing percolation ponds, the Central Park Lake (used as recreational non-contact water) and the Tierra Del Sol Golf course, (used for landscape and course irrigation). The eight percolation ponds hold approximately 300 acre-feet of tertiary treated effluent. The Central Park Lake is primarily a holding transfer point of tertiary treated effluent for the irrigation systems at Tierra Del Sol golf course. The treatment plant sends approximately 500 acre-feet/year of tertiary treated effluent to the Tierra Del Sol golf course.

California City currently utilize all available recycled water as such there are no future plans on the books to expand recycled water use. The present demands of the Tierra Del Sol golf course (approximately 163 MG/year) and Central Park Lake has consumed virtually all of the recyclable water that the treatment facility produced in prior years. However, as the City looks to the future the City is looking at the feasibility of using the tertiary treated effluent on the green belts, parks and other facilities. The capital cost of the recycle water distribution system to convey the treated effluent to potential recycling points, has been a deterrent to the City's investment. However, grants may provide opportunities for additional water recycling in the future both in the form of expanding use locations and providing opportunities for additional residence of the City to connect to the sewer collection system. Currently, approximately 30 percent of the City is served by the WWTP onsite septic systems serve the remaining areas.

The City has achieved considerable savings in potable water consumption because of the use of recycled water for golf course irrigation and the Central Park lakes. Therefore the expanded use of recycled water for irrigation of medians and neighborhood parks will further reduce water consumption. However, installing a recycled water distribution system for limited residential and small businesses use has been demonstrated in other areas to not be cost effective and is not expected to be implemented in the near term in the City.

The City of California City does not sell the tertiary treated effluent produced by the Treatment Facility and is the sole end user from a marketing standpoint therefore; the City has not developed a program that encourages the use of recycled water.

6.6 Future Water Projects

Legal Requirements:

> *§10631(h) (Describe) all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.*

The City's water system contains a large percentage of steel water mains which were constructed in the 1960s. These water mains are susceptible to corrosion over time and are very prone to leakage. The Water Master Plan 2002 recommended a water main replacement program be implemented to replace all steel mains. The completion of the water main replacement program is expected to substantially reduce the volume of "unaccounted" water lost by leakage.

Table 6.6-1 (UWMPGB 6-7): Future Water Supply Projects

Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
☐	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
Page 50	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Agency
	Drop Down List (y/n)	*If Yes, Agency Name*			*Drop Down List*	*This may be a range*
Add additional rows as needed						
WWTP Misc	No		Dewatering,Ras/Was, Scada Control	2016-2017	All Year Types	UnKnown
Well #01	No		Rebuild/Recommision	2018	All Year Types	289
Well #11	No		Rebuild/Recommision	2019	All Year Types	158
NOTES: Expected Increase in Water in MGy						

6.6.1 WWTP Upgrades

Several upgrades and improvement plans are in place for the Wastewater Treatment Plant (WWTP). They are as follows:

Sludge Production RAS/WAS System – Dewatering System/Drying Bed Overhaul

SCADA System Control – Replace Current Phone Dial-out Alarm System.

Chlorination System- Gas Chlorination System Replacement

Percolation Ponds-Soil Core Sampling/ Increase Size/Remove Dikes

Influent Headworks-Add Second Flow Channel/ Replace Bar Screen

Influent Life Station/Filter Influent Lift Station- Panels Rebuild/ Pumps w/Backup
Tertiary Filtration System- Cloth Type Filtration
Chemical Addition Facility-
Flocculation/Coagulation Process- Increase Chamber Size/Relocate
Aeration Basins-Resurface
Contact Chamber - Line/Baffles/Control Gates.

The above items will improve the operations of the WWTP Facility and prepare the facility for the anticipates and planned increases in influent flow collections.

6.6.2 Well #01

The well and casing are in place the plan is to install a new pump and pump controls, verify water quality then connect the pumped water to the water transmission system. The City is in the process of acquiring bids to complete the necessary work.

6.6.3 Well #02

The well and casing are in place the plan is to install a new pump and pump controls, verify water quality then connect the pumped water to the water transmission system. The City is in the process of acquiring bids to complete the necessary work.

6.6.4 Scada System Upgrades

The California City Water mains and distribution systems are aging and as such the City has found that the tighter the controls are on the system the less pressure waves/spikes occur. Three key components have allowed for this control First the major wells have been equipped with VFDs allowing them to turn on and off slowly. Second, a new transmission line was installed separating distribution from production systems. The distribution system is no longer exposed to the required production pressures to push the water to the storage tanks. Third, The SCADA system has been upgraded/re-commissioned such that pressures at critical points can be monitored, controlled, and High presser spikes have been eliminated. These SCADA systems will continue to be improved and additional pressure monitoring locations commissioned to allow historical review and tighter control.

7 WATER SUPPLY RELIABILITY

7.1 Water Supply Reliability

Legal Requirements:

> *§10620(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.*
>
> *§10631(c)(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.*

7.1.1 Frequency and Magnitude of Supply Deficiencies

This section discusses the reliability of water supplies and their vulnerability to seasonal and climatic shortages. The City has historically used mostly groundwater to meet all of their water demands. Groundwater supplies are not immediately impacted by droughts, and, as a result, there is no history of any water supply deficiencies for the City water system. Even during the 1976-1977 droughts, records indicate a sufficient supply of water.

Table 7.1-1 (UWMPGB 6-8): Water Supplies – Actual

Table 6-8 Retail: Water Supplies — Actual				
Water Supply		2015		
Drop down list *May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*	Additional Detail on Water Supply	Actual Volume	Water Quality *Drop Down List*	Total Right or Safe Yield *(optional)*
Add additional rows as needed				
Groundwater	6 Wells	963	Drinking Water	2,413
Surface water	AVEK	212	Drinking Water	349
	Total	1,175		2,761
NOTES: Groundwater total right or safe yield is 90% of the 2015 maximum capacity of (2,653.8 MG). By 2020 two additional wells will be added to bring the maximum capacity up to (3,127.32 MG) the safe yield will then be 2,815 MG.				

The City obtains approximately 20 percent of its water supply from AVEK. The source of AVEK water is the State Water Project with the water delivered through the California Aqueduct. The AVEK water is thus subject to variability in supply and in reliability. The supply variability is a function of hydrologic conditions in northern California. The reliability is a function of environmental conditions in the Sacramento-San Joaquin River

Delta. The Delta is extremely vulnerable to earthquakes, rising sea levels and droughts. If there is a water shortage, all AVEK customs will receive a smaller allocation of water. When this occurs, California City will utilize more groundwater.

Table 7.1-2 (UWMPGB 6-9): Water Supplies – Projected

Table 6-9 Retail: Water Supplies — Projected											
Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*									
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool		2020		2025		2030		2035		2040 *(opt)*	
		Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*
Add additional rows as needed											
Groundwater	6 Wells	2,502	2,815	2,502	2,815	2,502	2,815	2,502	2,815	2,502	2,815
Surface water	AVEK	349	349	349	349	349	349	349	349	349	349
	Total	2,851	3,164	2,851	3,164	2,851	3,164	2,851	3,164	2,851	3,164
NOTES: Groundwater total right or safe yield (2,815 MG) is 90% of the maximum (3,127.32 MG) well production capacity listed in Table 3.3-1. The reasonably available volume (2,502 MG) is 80% of the maximum.											

Regarding the groundwater supply, the most likely reasons the City would have a deficiency would be due to coliform contamination, pump failure, well collapse or other mechanical or structural failure. Another scenario would be a declining groundwater table due to lack of recharge. In this scenario, well pumps would need to be lowered and/or the well deepened. The City has a goal to maintain sufficient standby well capacity to meet peak month water demand with the largest well out of service. With sufficient standby well capacity, a short term loss of a well would not affect overall water supply.

In addition, the most immediate threat of water shortage could arise from damage due to an earthquake, or an extended power outage. An exceptionally long hot spell during summer months or high winds causing power outages are the main concern due to climate. Customers are encouraged to water lawns during early morning hours and for shorter period of time when temperatures exceed normal. The water system is gravity fed from a 2.5 MG tank, kept a minimum two-thirds full at all times. During an extended power supply emergency, the City can institute a water conservation emergency which would limit water use.

7.1.2 Basis of Water Year Data

Only the surface water components of the City's supply are immediately affected by drought conditions and the volume available (2472 MG) is based on 80% (2,123 MG) of the maximum pumping (2,653.8 MG) capacity plus the AVEK (349 MG); and based on the fact that at 80% of maximum, the remaining 20%(531 MG) could easily make up should other sources be temporarily lost, and based on the fact that losing a source for an entire year is very unlikely; therefore the volume available remains a constant (2,472 MG).

Table 7.1-3 (UWMPGB 7-1): Basis of Water Year Data

Table 7-1 Retail: Basis of Water Year Data			
Year Type	Base Year *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000*	Available Supplies if Year Type Repeats	
		☐ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____	
		☑ Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	% of Average Supply
Average Year	2015	2472	100%
Single-Dry Year	2009	2472	100%
Multiple-Dry Years 1st Year	2010	2472	100%
Multiple-Dry Years 2nd Year	2011	2472	100%
Multiple-Dry Years 3rd Year	2012	2472	100%
Multiple-Dry Years 4th Year *Optional*	2013	2472	100%
Multiple-Dry Years 5th Year *Optional*	2014	2472	100%
Multiple-Dry Years 6th Year *Optional*	2015	2472	100%
Agency may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If an agency uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.			
NOTES: The volume available(2,472 MG) is 80% of the maximum pumping capcity (2,653.8 MG) plus AVEK water (349 MG). In 2020 the maximum pumping capacity will be (3,127.32 MG)-> 80% (2,501.86 MG) + (349 MG) = (2,851 MG)<- the 2020 volume available.			

7.1.3 Supply Reliability

Normal year supply is shown in Table 7.1-4 below. The supply total (2,851 MG) is from Table 7.1-2 above and is based on 80% (2,502 MG) of the maximum (3,127.32 MG) well production capacity listed in Table 3.3-1 plus the AVEK (349 MG).

Table 7.1-4 (UWMPGB 7-2): Normal Year Supply and Demand Comparison

Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 *(Opt)*
Supply totals *(autofill from Table 6-9)*	2,851	2,851	2,851	2,851	2,851
Demand totals *(autofill from Table 4-3)*	1,741	1,815	1,890	1,966	2,201
Difference	1,110	1,036	961	884	650
NOTES: Recycled water is not included in this table. For supply and demand of recycled water 2015-2040 see Table 6.5-6					

Only the surface water components of the City's supply are immediately affected by drought conditions and the volume available (2851 MG) is based on 80% (2,502 MG) of the maximum pumping (3,127.32 MG) capacity plus the AVEK (349 MG); and based on the fact that at 80% of maximum, the remaining 20%(625 MG) this amount could easily make up the difference for the short term should other sources be temporarily lost, and based on the fact that losing a source for an entire year is very unlikely; therefore the volume available remains a constant (2,851 MG) for the above Table 7.1-3 and for the Planning horizon 2040 of this report including tables 7.1-4 and 7.1-5.

Table 7.1-5 (UWMPGB 7-3): Single Dry Year Supply and Demand Comparison

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 (Opt)
Supply totals	2,851	2,851	2,851	2,851	2,851
Demand totals	1,741	1815	1,890	1,966	2,201
Difference	1,110	1,036	961	885	650
NOTES:					

Table 7.1-6 (UWMPGB 7-4): Multiple Dry Years Supply and Demand Comparison

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	2,851	2,851	2,851	2,851	2,851
	Demand totals	1,741	1,815	1,890	1,966	2,201
	Difference	1,110	1,036	961	885	650
Second year	Supply totals	2,851	2,851	2,851	2,851	2,851
	Demand totals	1,741	1,815	1,890	1,966	2,201
	Difference	1,110	1,036	961	885	650
Third year	Supply totals	2,851	2,851	2,851	2,851	2,851
	Demand totals	1,741	1,815	1,890	1,966	2,201
	Difference	1,110	1,036	961	885	650
Fourth year *(optional)*	Supply totals	2,851	2,851	2,851	2,851	2,851
	Demand totals	1,741	1,815	1,890	1,966	2,201
	Difference	1,110	1,036	961	885	650
Fifth year *(optional)*	Supply totals	2,851	2,851	2,851	2,851	2,851
	Demand totals	1,741	1,815	1,890	1,966	2,201
	Difference	1,110	1,036	961	885	650
Sixth year *(optional)*	Supply totals	2,851	2,851	2,851	2,851	2,851
	Demand totals	1,741	1,815	1,890	1,966	2,201
	Difference	1,110	1,036	961	885	650
NOTES:						

7.2 Factors Affecting Supply Reliability

California City's primary water source is groundwater pumping. The wells are monitored and maintained closely. Each well is sounded regularly to detect any drops in the water table. Two additional production wells are being planned for 2020 and four additional storage tanks are in the early planning stages.

The wastewater treatment plant capacity increased from 1 MGD to 1.5 MGD in 2002 with changes in the City's Municipal Code, a regular stream of additional sewer connections is expected to match City growth. This will provide additional recycled water which will save on potable water use for irrigation. Potable water can still be used as a back-up when needed.

7.2.1 Legal

At this time the groundwater supplies the City relies upon are neither in the process of adjudication nor the subject of any new legislation limiting them.

7.2.2 Environmental

The status of the environmental situation in California is routinely changing because of new legislation, regulations, court decisions and endangered species issues. Should new environmental legislation/regulations become effective, it could potentially affect water supply. The recent concerns in the Delta are an example of the conflict between environmental water needs versus municipal/farming water needs. Because of the mixture of groundwater and surface water within the City, it is anticipated that alterations to the water supply could be made to accommodate these changes, should they occur.

7.2.3 Water Quality

Water quality standards are reviewed periodically as new constituents are deemed 'of concern' and MCLs are established or modified. City staff will monitor changes to drinking water standards and respond accordingly.

It is conceivable that an MCL may change or be introduced that removes a portion of the water supply for the City for a short period until treatment can be developed or new supplies can be developed. For the purposes of this UWMP, no loss of supply is assumed to occur as a result of changing water quality standards.

7.2.4 Climatic

As climate change occurs and begins to affect water supply conditions more, alterations in the water supply planning arena will have to take place. Climate change elements such as drought or massive flooding could strongly affect supply reliability, therefore requiring the City to make modification to their water supplies. Within the time frame of

this UWMP, climate change is not assumed to affect the water supply. The City will adapt to any changes by utilizing its groundwater to overcome any short-term shortage.

7.2.5 Disaster

A disaster that damages the main water lines causing leakage and to loss or contamination of stored water supplies and or a disaster that causes power outages for extended periods of time, not allowing well operation, could potently deplete water storage reservoirs. Well #03 (700 gpm) (367.92 MG) is a Natural Gas well that can operate in the event of a power outage. Some of the risk associated with the disaster(s) are mitigated by the fact that the water storage tanks are located in different sections of the city, and the eight wells are located thought the city. A disaster in one area hopefully would not affect or would have minimal effect on other areas.

Recent drought has caused the City to closely evaluate its water supply and demand. The California City customers are very adept at conserving water when a need exists to do so. In the event of a disaster that impacted water supplies residence would make due with what's available and assist with whatever was necessary to restore water supplies.

8 Water Shortage Contingency

8.1 Water Shortage Contingency Planning

Legal Requirements:

§10632(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

§10632(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

§10632(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

§10632(f) Penalties or charges for excessive use, where applicable.

§10632(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures or the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

§10632(h) A draft water shortage contingency resolution or ordinance.

California City adopted an Emergency Response Plan in 1999. They also participated in a functional disaster exercise in conjunction with County or State officials. Emergency exercises will be conducted annually. Although utility loss is covered in the plan, a more precise water contingency plan is as follows:

Triggering Events

1 Reductions in specific water supplies:
2 Dropping groundwater level.
3 Changes in water quality
4 System Failures
5 Disaster

Stages of Action

City personnel first will evaluate the water shortage and recommend actions to Council, and call a special meeting if needed.

Evaluation will be based on the following conditions:

1. Cause of water shortage
2. Possible duration of shortage
3. Amount of shortage based on % of normal water demand

8.1.1 Water Shortage Stages and Reduction Objectives

The City has prepared a 4 stage conservation plan to invoke during a declared water shortage. The plan includes voluntary and mandatory rationing depending on the severity of the water supply shortage.

Table 8.1-1 (UWMPGB 8-1): Stages of Water Shortage Contingency Plan

Table 8-1 Retail Stages of Water Shortage Contingency Plan		
Stage	Complete Both	
	Percent Supply Reduction[1] *Numerical value as a percent*	Water Supply Condition *(Narrative description)*
Add additional rows as needed		
I	15%	Contamination loss or supply below Normal
II	25%	Contamination loss or supply below Normal
III	35%	Contamination loss or supply below Normal
IV	50%	Contamination loss or supply below Normal
[1] One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.		
NOTES:		

Table 8.1-2: Water Shortage Stages and Reduction Objectives

Stage No.	Customer Reduction Goals	Type of Rationing	% Shortage
I	15%	Voluntary	Up to 15%
II	25%	Mandatory	15 – 25%
III	35%	Mandatory	25 – 35%
IV	50% or greater	Mandatory	35 – 50%

Priority for use of available potable water during a shortage is established for all customers according to the following ranking system:

- Minimum health and safety allocations for interior residential needs (includes single family, multi-family, hospitals, convalescent facilities, retirement and mobile home communities, student housing, fire fighting and public safety.)

- Commercial, industrial, institutional/governmental operations (where water is

used for manufacturing and for minimum health and safety allocations for employees and visitors), to maintain jobs and economic base of the community (not for landscape uses).

- Permanent agriculture (orchards, vineyards and other commercial agriculture which would require at least five years to return to production).
- Annual agriculture (floriculture, strawberries and other truck crops).
- Existing landscaping
- New customers, proposed projects without permits when shortage declared.

A potable water shortage reduction will reduce recycled water production to the extent that indoor water use is reduced.

8.1.2 Water Shortage – Health and Safety Requirements

Based on commonly accepted estimates of interior residential water use in the United States, **Table 8.1-3** indicates per capita health and safety water requirements. In Stage I shortage, customers may adjust either interior or outdoor water use (or both), in order to meet the voluntary water reduction goal.

However, under Stage II, Stage III and Stage IV mandatory rationing programs, the City has established a health and safety allotment of 68 gpcd, because that amount of water is sufficient for essential interior water with no habit or plumbing fixture changes. If customers wish to change water use habits or plumbing fixtures, 68 gpcd is sufficient to provide for limited non-essential (i.e. outdoor) uses.

Stage IV mandatory rationing, which is likely to be declared only as the result of a prolonged water shortage or as a result of a disaster, would require that customers make changes in their interior water use habits (for instance, not flushing toilets unless “necessary” or taking less frequent or shorter showers).

Table 8.1-3: Per Capita Health and Safety Water Quantity Calculations

	Non-Conserving Fixtures		Habit Changes[1]		Conserving Fixtures[2]	
Toilets	5 flushes x 5.5 gpf	27.5	3 flushes x 5.5 gpf	16.5	5 flushes x 1.6 gpf	8.0
Shower	5 min x 4.0 gpm	20.0	4 min x 3.0 gpm	12.0	5 min x 2.0 gpm	10.0
Washer	12.5 gpcd	12.5	11.5 gpcd	11.5	11.5 gpcd	11.5
Kitchen	4 gpcd	4.0	4 gpcd	4.0	4 gpcd	4.0
Other	4 gpcd	4.0	4 gpcd	4.0	4 gpcd	4.0
Total (gpcd)		68.0		48.0		37.5

[1] Reduced shower use results from shorter and reduced flow. Reduced washer use results from fuller loads.
[2] Fixtures include ULF 1.6 gpf toilets, 2.0 gpm showerheads and efficient clothes washers.

8.1.3 Water Shortage Stages and Triggering Mechanisms

As the water purveyor, the City of California City must provide the minimum health and safety water needs of the community at all times. The water shortage response is designed to provide a minimum of 50 percent of normal supply during a severe or extended water shortage. The rationing program triggering levels shown below were established to ensure that this goal is met.

Rationing stages may be triggered by a shortage in one water source or a combination of sources. Although an actual shortage may occur at any time during the year, a shortage (if one occurs) is usually forecasted by the Water Department on or about April 1 each year.

The City's potable water sources are groundwater and imported surface water. Rationing stages may be triggered by a supply shortage or by contamination in one source or a combination or source. Because shortages overlap stages, triggers

automatically implement the more restrictive stage. Specific mechanisms for triggering the City's rationing stages are shown in Table 6-10Water Allotment Methods

The City has established the following allocation method for each customer type.

Single Family	Hybrid of Per-capita and Percentage Reduction
Multifamily	Hybrid of Per-capita and Percentage Reduction
Commercial	Percentage Reduction
Industrial	Percentage Reduction
GVT/Institutional	Percentage Reduction
Recreational	Percentage Reduction-vary by efficiency
New Customers	Per-capita (no allocation for new landscaping during a declared water shortage).

Based on current and project customer demand, the Emergency Plan indicates the water allocated to each customer type by priority and rationing stage during a declared water shortage.

Individual customer allotments are based on a five-year period. This gives the city a more accurate view of the usual water needs of each customer and provides additional flexibility in determining allotments and reviewing appeals. However, no allotment may be greater than the amount used in the most recent year of the five-year based period.

The Public Works Director shall classify each customer and calculate each customer's allotment according to the Sample Water Rationing Allocation Method. The allotment shall reflect seasonal patterns. Each customer shall be notified of their classification and allotment by mail before the effective date of the Water Shortage Emergency. New customers will be notified at the time the application for service is made. In a disaster, prior notice of allotment may not be possible, notice will be provided by other means. Any customer may appeal the Public Works Director's classification on the basis of use or the allotment on the basis of incorrect calculation.

Table 8.1-4: Water Shortage Stages and Triggering Mechanisms

Supply	Stage I Up to 15%	Stage II 15 – 25%	Stage III 25-35%	Stage IV 35-50%
Water Supply Condition				
Current Supply	Total supply is 85 – 90% "normal" And Below "normal" year is declared Or	Total supply is 75 – 85% "normal" Or Below "normal" year is declared Or	Total supply is 65 - 75% "normal" Or 4th consecutive Below "normal" year is declared. Or	Total supply is less than 65% "normal" Or 5th consecutive Below "normal" year is declared Or
Future Supply	Projected supply insufficient to provide 80% or "normal" deliveries for the next two years Or	Project supply insufficient to provide 75% of "normal" deliveries for the next two years. Or	Projected supply insufficient to provide 65% of "normal" deliveries for the next two years. Or	Projected supply insufficient to provide 50% of "normal" deliveries for the next two years. Or
Groundwater	No excess groundwater pumping undertaken	First year of excess groundwater pumping taken, must be "replaced" within four years.	Second year of excess groundwater pumping taken, must be "replaced" within four years.	No excess groundwater pumping available. Or Reduced groundwater pumping due to replenishment of previously pumped groundwater
Water Quality	Contamination of 10% of water supply (exceeds primary drinking water standards).	Contamination of 20% of water supply (exceeds primary drinking water standard).	Contamination of 30% of water supply (exceeds primary drinking water standards).	
Disaster Loss				Disaster Loss

8.1.4 Prohibitions, Consumption Reduction Methods, and Penalties

The City of California City's "No Waste" Ordinance includes prohibitions on various wasteful water uses such as lawn watering during mid-day hours, washing sidewalks and driveways with potable water, and allowing plumbing leaks to go uncorrected more than 24 hours after customer notification. The Fire Department personnel will also be notified to stop flowing hydrants (except when necessary).

Table 8.1-5 (UWMPGB 8-2): Restrictions and Prohibitions on End Uses

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users *Drop down list* *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? *Drop Down List*
Add additional rows as needed			
Always	Landscape - Restrict or prohibit runoff from landscape irrigation	Warning/Penalty	Yes
Always	Landscape - Limit landscape irrigation to specific times	Warning/Penalty	Yes
Always	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Warning/Penalty	Yes
Always	Other - Require automatic shut of hoses	Warning/Penalty	Yes
NA	Other - Prohibit use of potable water for construction and dust control	Allowed But Higher rates charged	Yes
NOTES:			

Table 8.1-6 (UWMPGB 8-3): Water Shortage Contingency – Consumption Reduction Methods

Table 8-3 Retail Only: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier *Drop down list* *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*
Add additional rows as needed		
Always	Expand Public Information Campaign	
Always	Improve Customer Billing	
Always	Offer Water Use Surveys	
Always	Decrease Line Flushing	
Always	Reduce System Water Loss	
I-IV	Increase Water Waste Patrols	
NOTES:		

Any customer violating the regulations and restrictions on water use set forth in the "No Water" Ordinance shall receive a written warning for the first such violation. Upon a second violation, the customer shall receive a written warning and the City may disconnect services if the violation continues. The violator shall pay the cost of service disconnection and re-connection. Any willful violation occurring subsequent to the issuance of the second written warning shall constitute a misdemeanor and may be referred to the Kern County District Attorney's office for prosecution pursuant. If water service is disconnected, it shall be restored only upon payment of the turn-on charge fixed by the City Council.

8.1.5 Revenue and Expenditure Impacts/Measures to Overcome Impacts

Analysis indicates rate increases would need to be as follows with no additional water purchased to maintain revenue during water shortage stages:

Stage I	No Increase
Stage II	25% Increase
Stage II	50% Increase
Stage IV	100% Increase

Table 8.1-7: Water Shortage Contingency – Penalties and Charges

Penalties or Charges	Stage When Penalty Takes Effect
Written Notice – 1st Violation	All
Written Warning and possible installation of flow-restrictor device – 2nd Violation	All
Misdemeanor Charge – 3rd and subsequent Violations	All
Disconnection – Potentially at 3rd or subsequent Violation	All

8.1.6 Actions During a Catastrophic Interruption

In the event of non-drought related events that interrupt the City's ability to provide water immediate measures need to be planned that will allow the City to provide a minimum amount of water to customers. Possible catastrophes include a regional power outage, terrorism event at selected locations or a natural disaster which affects selected facilities.

Table 8.1-8: Actions During a Catastrophic Event

Example of Actions	Check if Discussed
Determine what constitutes a proclamation of a water shortage	X
Stretch existing water storage	X
Obtain additional water supplies	
Develop additional water supplies	
Determine where the funding will come from	X
Contact and coordinate with other agencies	
Create an Emergency Response Team/Coordinator	X
Create a catastrophe preparedness plan	X
Put employees/contractors on-call	X
Develop methods to communicate with the public	X
Develop methods to prepare for water quality interruptions	X

8.1.7 Reduction Measuring Mechanism

Under normal water supply conditions, potable water production figures are recorded daily. Totals are reported weekly to the Water Treatment Facility Supervisor. Totals are reported monthly to the Water Department Manager and incorporated into the water supply report.

During a Stage I or a Stage II water shortage, daily production figures are reported to the Supervisor. The Supervisor compares the weekly production to the target weekly production to verify that the reduction goal is being met. Weekly reports are forwarded to the Public Works Director and the Water Shortage Response Team. Monthly reports are sent to the City Manager and the City Council so the corrective action can be taken.

During a stage III or a Stage IV water shortage, the procedure listed above will be followed with the addition of a daily production report to the Public Works Director.

During emergency shortage, production figures are reported to the Supervisor hourly and to the Public Works Director and the Water Shortage Response Team daily. Daily reports will be provided to the City Manager and the City Council.

8.2 Water Quality

Legal Requirements:

> *§10634 The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.*

California City's groundwater quality is fairly consistent; unlike many other communities in East Kern County, the City does not have arsenic contamination in their supply. The surface water delivered from AVEK and MPUD have not had quality problems in the past and the City has no reason to assume it will change in the future.

Table 8.2-1: Water Quality – Current and Projected Water Supply Impacts

Water source	Description of condition	2020	2025	2030	2035	2040
Surface Water	Acceptable	0	0	0	0	0
Groundwater	Acceptable	0	0	0	0	0

It is not anticipated that water quality will adversely affect water supply in the near future. In the instance that a well or surface water has water quality issues, an alternative water supply will be put in place to compensate for the loss.

8.3 Drought Planning

Legal Requirements:

§10631(c)(1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following: (A) an average water year, (B) a single dry water year, (C) multiple dry water years.

§10632(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

§10632(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency.

§10632(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

§10635(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

Past drought conditions have had little effect on water supply as the City relies primarily on groundwater. The City maintains an 18-hole championship golf course and central park area with several small lakes. In 1994, the City constructed a 1 MGD tertiary wastewater treatment plant. The treated effluent is utilized to fill the lakes and irrigate these facilities. The wastewater treatment plant was expanded to 1.5 MGD in 2002. Plans are in process to expand the wastewater treatment plant to 3.0 MGD in 2015. The sewer system will also be extended incrementally through the creation of neighborhood sewer assessment districts. This will ultimately make more recycled water available.

As discussed in **Table 8.1-2**, the stages of rationing vary from 15% (Stage 1) to 50% and higher (Stage IV). Stage 1 is considered the lowest level of rationing and is voluntary, while Stage 4 is the highest level and mandatory with a goal of reducing the customer usage by at least 50% in response to a water supply shortage of 35% to 50%.

Table 8.3-1 (UWMPGB 8-4): Minimum Supply Next Three Years

Table 8-4 Retail: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	2,851	2,851	2,851
NOTES: see Table 7.1-4 and associated paragraph for details.			

9 DEMAND MANAGEMENT MEASURES (DMM)

9.1 DMMs

Legal Requirements:

§10631(f)(1) and (2) (Describe and provide a schedule of implementation for) each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (A) water survey programs for single-family residential and multifamily residential customers; (B) residential plumbing retrofit; (C) system water audits, leak detection, and repair; (D) metering with commodity rates for all new connections and retrofit of existing connections; (E) large landscape conservation programs and incentives; (F) high-efficiency washing machine rebate programs; (G) public information programs; (H) school education programs; (I) conservation programs for commercial, industrial, and institutional accounts; (J) wholesale agency programs; (K) conservation pricing;(L) water conservation coordinator; (M) water waste prohibition; (N) residential ultra-lowflush.

§10631(f)(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

§10631(f)(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

§10631(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

The City has water conservation and recycling programs in place. It takes the issues of water conservation seriously and is implementing best management practices (BMPs) as necessary to achieve those goals. California Department of Water Resources (DWR) has expanded on typical BMPs in the form of Demand Management Measures (DMMs), which are discussed below.

9.1.1 Water Survey Programs

This program involves making free water audits available, upon request, to all residential customers. The audit would include identification of any leaks inside or outside the home, reviewing water usages with the customer and recommending improvements for the customer to implement.

California City has installed water meters on each water service connection. Within the city service area, residential meters are read on a monthly basis. The City requires separate irrigation meters for customers with large landscaping areas to distinguish outdoor water from indoor water use and for the facilitation of recycled water conversions. The City's CI, CII customers are required to have fire sprinkler systems, and since 2012, the City has required residential fire sprinklers in all new single and multi-family construction.

The City has been replacing its metering infrastructure with AMI since 2006 and is expecting to complete this process in 2019. With the AMI technology, meter readings are fed from meters to a hand held collector, which transmits meter reads to City computers. The information is then transformed into customer reports that detail water usages, time of use, and leak detection. The system increases meter reading accuracy and efficiency and provides hour-by-hour meter reads, significantly improving customer service levels. As of 2015, approximately 20% of the City customers are served by AMI.

Implementation of AMI will allow the City to automate meter reading and provide real-time water use data to City staff and customers that can be used to aggressively target leaks and atypically high water use during normal years and periods of water shortage. Implementation of AMI will also increase City's communication with customers and allow customers to view water use in near real-time through the City's Staff

City crews provide water audits free of charge to customers who question or doubt the data being generated by their meters. The audits will at least consist of manual meter reads to confirm usage reported by a handheld data collection device used to electronically read meters.

City staff can also provide an assessment of a customer's water use by checking for leaks, irrigation use and signs of water wasting. Calls from customers requesting an audit total to less than six per calendar year and are generally performed to the satisfaction of the customer.

BUDGET: Meter retrofits and outreaching programs currently have an annual budget of $150,000 for mostly contractual work. The staff costs for implementing this DMM are absorbed by the water enterprise operational budget.

9.1.2 Residential Plumbing Retrofit

This DMM involves installing water savings devices within residences, business and other usage locations to reduce the amount of water used or to limit the amount of water delivered to the connection. These devices include low flow showerheads, faucet aerators with flow restrictors and low flow toilets. State law began requiring low-flow fixtures on all new construction in 1978, with an increase in stringency of the regulation in 1992, which required Ultra-Low-Flush toilets.

The City requires all new construction to install low-flow devices such as toilets and showerheads but does not have an enforceable ordinance requiring the replacement of high flow fixtures for older homes and businesses with their low-flow counterparts. A citywide retrofit program for older service connections has not been conducted to date.

The City estimates that there over 3,500 single family units that were constructed before the low-flow fixture requirements. It's anticipated that funding and implementing retrofits for the older service connections would require one dedicated and certified staff member at an annual cost of $100,000 per year plus the cost of specific materials which the water enterprise does not have funding for at the present time.

BUDGET: No specific budget has been set-aside for this DMM at this time.

9.1.3 Water System Audits

The Water System Audits involve accounting for any water loss throughout the system by quantifying the amount of water used and the amount delivered. The difference is the water loss. Once the loss is quantified, the DMM requires that the leaks be isolated and a plan for repair implemented.

The City's water system experienced over 400 mainline and over 375 service failures in 2015 and lost the ability to sustain system pressure to move water from the well head through the distribution system to the City's main storage tank. The City Council approved a 1.5 million dollar loan form the general fund to construct a seven mile pipeline project to install a new transmission waterline form the wellheads to the mainline from the main storage tank and install three VFD's and two pressure reducing valves to reduce the pressure in the city's main water zone. This project was completed in May 2016 and has reduced the system pressure below the info structures current failure point. This has significantly reduced mainline and service line failures.

BUDGET: 1.5 million dollar general fund loan for this DMM.

9.1.4 Metering and Commodity Rates

The Metering DMM entails installing water meters on all new connections and implementing a plan to retrofit all existing unmetered connections.

The City's water system is fully metered and in full compliance with the State of California Assembly Bill No. 2572 (AB 2572). However, the continuing drought and water crisis along with the City's inability to consistently uphold the State's conservation standard has led to the citywide meter replacement and conversion to AMI reading system that will help in detecting usage abnormalities via radio communication. Once an AMI system is fully installed and operational, with a balance of approximately 2,000 meters needed to be upgraded and replaced. The coordination, funding and implementation of this plan will be completed by 2019.

BUDGET: The current annual budget for implementing this DMM is $480,000.

9.1.5 Landscape and Irrigation Programs

DMM5 consists of assigning water budgets to dedicated irrigation or mixed-use meters and providing audits to those meters.

Despite not having funds to offer incentives or staff to operate a defined landscape conservation program, the City has managed to retrofit public landscaped areas as well as worked with new development to ensure they have the most optimal irrigation systems possible.

Since the 2010 UWMP was adopted, service meters were updated at every park site with the intent of incentivizing the Parks Division to operate the irrigation systems with the minimum water necessary to maintain recreational areas.

Future plans include converting all municipal sites to metered billing, removing ornamental grass at City sites, and Modernizing park site irrigation systems.

BUDGET: There is currently not a budget line item for this DMM program. The staff and material costs for implementing this DMM are absorbed by the water enterprise operational funds.

9.1.6 Washing Machine Rebate Program

The Washing Machine Rebate DMM provides a financial incentive to customers who install high-efficiency washing machines in lieu of traditional machines in their homes.

The City has not developed its own rebate program and does not plan to implement one because it does not appear to be cost-effective for its operation.

In addressing this DMM within the 2010 UWMP, it was assumed that the City distribution system typically pumps and distributes 1.1 billion gallons every calendar year and it costs approximately $460,000 annually in energy costs to do this which averages to $0.0003833 in energy costs per every gallon of water pumped. In analyzing the feasibility of a rebate program, the City assumed $50 or $75 as a rebate that offers enough incentive for customers to upgrade to a high-efficiency unit. Such a unit could provide a 25% reduction to a typical machine's consumption of 40 gallons per load, leaving 10 gallons in water savings per load. A typical household could be expected to run three loads per week which leaves 1,560 gallons in water savings per year per unit. The energy savings to the City per unit would apparently be less than $1.00 per year. It does not appear to be reasonable to expect a machine to have enough of a life span to enable the City to recover the initial cost of the rebate. The City is willing to provide a questionnaire for its water customers as a bill insert to survey their interest in such a rebate program and use the results to further evaluate its feasibility. For now, it is anticipated that rebates offered through Southern California Edison are what consumers will utilize once they purchase and install high-efficiency washing units.

BUDGET: No specific budget has been set-aside for this DMM at this time.

9.1.7 Public Information Program

The Public Information DMM involves dissemination of information to the public through brochures, press releases, educational flyers, commercials, water conservation flyers and conservation kits, to name a few.

The City currently provides water conservation information through billing inserts. Additional information is made available to the public through the UWMP and regional water planning efforts. Notices of public meetings for the IRWMP will be posted to involve citizens in the process and educate the community about water conservation.

This program does not provide a quantifiable water savings, however it goes a long way towards promoting conservation efforts. The City intends to distribute one flyer per year, minimum, and the effectiveness of the program will be measured by completion of the task.

9.1.8 School Education Program

The School Education Program provides for an educational process that provides materials and assistance for educating middle school, high school and college aged students about water issues including conservation and usages.

Since the 2010 UWMP completion and approval, the City has increased staffing and resources to use towards public education and outreach. This was mostly in response to the current multi-year statewide drought and water crisis that left reduction mandates that our customers had to learn about and comply with. In addition to the traditional bill inserts and postcard notices, the City made conservation awareness and compliance pitches to customers and residents via the City website, Facebook and other social and digital media sources. Other means in which we communicate include a digital message board placed at high profile locations, door to door canvassing, and radio station public service announcements and information booths at special events funded by the City and other water service providers within Kern County.

BUDGET: There is currently not a budget line item for this DMM program. The staff and material costs for implementing this DMM are absorbed by the water enterprise operational funds.

9.1.9 Commercial, Industrial, and Institutional Conservation Programs

The conservation program for CII Users involves replacing existing toilets with ultra-low-flow toilets in CII facilities within the city. Additionally, surveys are provided for these customers to evaluate their water usage and help with possible ways to save.

Until its water services are fully metered, the City's most logical and reasonable approach to achieving conservation is through public outreach and enforcement of the water use policies and restrictions. Currently, the Public Works Department does not have funding for staff dedicated to water conservation programs full-time. Our part-time use of staffing includes the following:

1. Special Projects Coordinator for Public Outreach
    a. Door-to-door notice distribution.
    b. Social and digital media publicizing and notifications.
    c. Text message alerts for those customers that sign up for notifications via the City's Blackboard service.
2. Water Personnel for Conservation Field Enforcement
    a. Site visits and inspections.
    b. Issuing citations for confirmed water wasting or water use violations.

Starting in its 2015-20116 Fiscal Year, the City added a new and full-time meter reader and conservation officer to, not only read, install and troubleshoot meters, but to also

serve as its primary water conservation coordinator.

BUDGET: There is currently not a budget line item for this DMM program. The staff and material costs for implementing this DMM are absorbed by the water enterprise operational funds.

9.1.10 Wholesale Agency Programs

DMM10 applies to wholesale water suppliers. The City does not supply wholesale water and therefore this DMM does not apply.

9.1.11 Conservation Pricing

This DMM would implement a tiered water rate structure to encourage conservation. The City already has implemented this type of rate structure.

The current meter rate plan was approved in 2014. The typical water bill is made up using a fixed monthly charge based on the size of meter and water usage billed by tiers. The following tables detail the current tiered billing structure. At the time the current rate structure was approved, it was seen as a significant change, particularly for existing metered customers using the previous rate plan in which a fixed fee purchased an allowance of water before the usage rate could be assessed. Therefore, tiered usage rates and other more complicated plans that could have encouraged more conservation were not seen as practical options. Rather, the approved rates were seen as a first step and easier transition towards conservation that at least discouraged wasting. Since the current rates were approved, a multi-year statewide drought and the State's enforcement of conservation measures and standards has prompted to the City to revisit tiered rates and other rate alternatives to compel its customers to be more proactive with conservation and engaged with our water crisis. In 2016, the Public Works Director informed the City Council that a comprehensive financial analysis be completed to develop rate alternatives that could achieve better conservation while still complying with the cost of service requirements set forth by Proposition 218.

Table 9.1-1: Monthly Meter and Usage Charges

	Monthly Meter Charges					
Meter Size	Current	10/13/2014	7/1/2015	7/1/2016	7/1/2017	7/1/2018
3/4" or smaller	$23.62	$37.79	$44.22	$51.73	$52.99	$54.28
1"	$39.45	$63.12	$73.85	$86.40	$88.50	$90.66
1.5"	$78.65	$125.84	$147.23	$172.26	$176.45	$180.74
2"	$125.89	$201.42	$235.67	$275.73	$282.43	$289.29
3"	$275.65	$441.04	$516.02	$603.74	$618.41	$633.44
4"	$496.02	$793.63	$928.55	$1,086.40	$1,112.80	$1,139.84
6"	$1,102.30	$1,763.68	$2,063.51	$2,414.30	$2,472.97	$2,533.06
8"	$1,889.60	$3,023.36	$3,537.33	$4,138.68	$4,239.25	$4,342.26

	Monthly Usage Charges Per HCF					
Tiers	Current	10/13/2014	7/1/2015	7/1/2016	7/1/2017	7/1/2018
Tier 1	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Tier 2	$0.55	$0.88	$1.03	$1.20	$1.23	$1.26
Tier 3	$1.15	$1.84	$2.15	$2.52	$2.58	$2.64
Tier 4	$1.45	$2.32	$2.71	$3.18	$3.25	$3.33
Tier 5	$1.75	$2.80	$3.28	$3.83	$3.93	$4.02

Table 9.1-2: Tier Breakpoints by Meter Size (CF)

Tier Breakpoints by Meter Size (CF)							
3/4" or smaller		**1.5"**		**3"**		**6"**	
Tier 1	0 to 900	Tier 1	0 to 2,997	Tier 1	0 to 10,503	Tier 1	0 to 42,003
Tier 2	900 to 1,500	Tier 2	2,997 to 4,995	Tier 2	10,503 to 17,505	Tier 2	42,003 to 70,005
Tier 3	1,500 to 2,500	Tier 3	4,995 to 8,325	Tier 3	17,505 to 29,175	Tier 3	70,005 to 116,675
Tier 4	2,500 to 4,000	Tier 4	8,325 to 13,320	Tier 4	29,175 to 46,680	Tier 4	116,675 to 186,680
Tier 5	4,000+	Tier 5	13,320+	Tier 5	46,680+	Tier 5	186,680+
1"		**2"**		**4"**		**8"**	
Tier 1	0 to 1,503	Tier 1	0 to 4,797	Tier 1	0 to 18,900	Tier 1	0 to 72,000
Tier 2	1,503 to 2,505	Tier 2	4,797 to 7,995	Tier 2	18,900 to 31,500	Tier 2	72,000 to 120,000
Tier 3	2,505 to 4,175	Tier 3	7,995 to 13,325	Tier 3	31,500 to 52,500	Tier 3	120,000 to 200,000
Tier 4	4,175 to 6,680	Tier 4	13,325 to 21,320	Tier 4	52,500 to 84,000	Tier 4	200,000 to 320,000
Tier 5	6,680+	Tier 5	21,320+	Tier 5	84,000+	Tier 5	320,000+

BUDGET: There is currently not a budget line item for this DMM program. The staff and material costs for implementing this DMM are absorbed by the water enterprise operational funds.

9.1.12 Water Conservation Coordinator

A Water Conservation Coordinator (WCC) would be responsible for coordinating water conservation programs and activities including the public information program and education program.

The has a full-time Water Conservation Coordinator and has also utilized available staff on a part-time basis to patrol all service areas of the City to monitor water use and enforce the water use policies. These patrols were routinely used during 2015, 2016 and played a major role in getting the City's water customers to reduce their water usge.

The City's 2016-2017 fiscal year budget calls for funding the City's first full-time meter department technicians that will primarily read and install meters but will also support the Conservation Coordinator to enforce water use policies.

BUDGET: The City budgets approximately $150,000 annually to fund the new meter technicians and Conservation Coordinator to ensure that water audit and leak detection programs are conducted.

9.1.13 Water Waste Prohibition

The City has a "No Waste" Ordinance in place which includes prohibitions on various wasteful water uses such as lawn watering during mid-day hours, washing sidewalks and driveways with potable water, and allowing plumbing leaks to go uncorrected more than 24 hours after customer notification. The Fire Department personnel will also be notified to stop flowing hydrants (except when necessary).

In response to a series of Executive Orders issued by the Governor on actions necessary to address the severe drought conditions within the State of California, the City Council initially responded with urgency ordinances in 2015 to set forth State-issued and additional City water use policies and restrictions to achieve the conservation mandated for the City, which had been 36%. Implementation of the urgency ordinance provisions did not yield the desired conservation results plus it became apparent to State and local officials that the drought and water crisis prompting mandated conservation would extend beyond 2015. Therefore, the Council later adopted Resolution No. 05-15-2623 to provide more consistent and long-term conservation policies and enforcement.

The Resolution utilizes most of what the Council adopted through the urgency measures. The following summarizes the adopted Resolution:

Permanent/All Times:

1. The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots or structures;
2. The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use;
3. The application of potable water to driveways and sidewalks;
4. The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system;
5. The application of potable water to outdoor landscapes during and within 48 hours after measurable (1/4" or greater) rainfall; (new)
6. The serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars or other public places where food or drink are served and/or purchased; (new)
7. Irrigation with potable water outside newly constructed homes and buildings that is not delivered by drip or micro spray systems; (new) and
8. No Watering between the hours of 9a.m. and 6 p.m.; except that the provision shall not apply to commercial nurseries, golf courses and other water-dependent industries and;
9. Outdoor irrigation of ornamental landscapes or turf with potable water by the City's customers not in compliance with limits of time and days.

BUDGET: There is currently not a budget line item for this DMM program. The staff and material costs for implementing this DMM are absorbed by the water enterprise operational funds.

9.1.14 Ultra Low Flush Toilet Replacement

California City has determined for its system, a toilet replacement program would be too costly. According to the EPA, the average person flushes the toilet 5.1 times per day. California City has an average of 3.07 people per residence, which yields 15.66 flushes

per day. A standard toilet uses an average of 3.5 gallons per flush (gpf), while a low flush toilet uses 1.28 gpf.

Table 9.1-3: Low Flush Toilet Cost/Benefit Analysis

Flushes per Day[1]	15.66
Gallons Saved per Flush[2]	2.22
Water Savings per Rebate (MG)	0.01297
Cost of Rebate[3]	$100
Cost per MG	$837

Notes:
[1] *EPA Toilet Supporting Statement*
[2] Standard Toilets use 3.5 gallons per flush; Low Flush Toilets use 1.28 gallons per flush per EPA guidelines
[3] Cost of Rebate includes hard cost of rebate and soft cost of managing and implementing rebate program.

As shown above, utilizing the rebate program would equate to a cost of $837 per million gallons (MG) of water produced. California City produces their water for approximately $195 per (MG). The high cost of water savings for this program makes it economically infeasible to implement within California City.

The City has not developed its ultra-low flush toilet replacement program and does not plan to implement one because it does not appear to be cost-effective for its operation.

As with a high-efficiency washing machine rebate program previously addressed in this plan, the City assumes $100 as a rebate that offers enough incentive for customers to upgrade to a low-flow toilet. A typical low-flow toilet can use up to 2 gallons per flush which could generally use 18 gallons per day for a typical single family household if one assumes 3 persons per house and 3 flushes per person. Older toilets can be expected to use at least 4 gallons per flush which brings a single-family household up to 36 gallons per day assuming the same number of flushes. Per household, the daily savings of water appears to be 18 gallons and the annual savings appears to be approximately 6,500 gallons per year. The projected annual energy savings in pumping, using the same unit cost of $0.0003833 per gallon described for analyzing DMM 06, suggests an annual energy savings of less than $2.50. It does not appear to be reasonable to expect a toilet to have enough of a life span to enable the City to recover the initial cost of the rebate.

The City is willing to provide a questionnaire for its water customers as a bill insert to survey their interest in such a program and use the results to further evaluate its feasibility. The interest and feedback from customers that the City receives e will be used to further assess the need to budget a citywide effort.

BUDGET: There is currently not a budget line item for this DMM program.

9.2 DMM Return on Investment

California City currently promotes water conservation and water waste prevention through public education, monitoring customer usage history, enforcement of state and local regulations, distribution of low flow shower heads, and quantity rates. The City's most prominent conservation success has come from tighter controls on the water system eliminating line blowout and line leakage water losses.

Best management practices, as well as moral obligations, require the city to try and minimize water rates while ensuring sufficient revenue to cover water system costs. As the City currently has excess water rights and excess water production capacity, If the city unwisely tries to reduce water sales, fixed costs will remain the same but water revenues will drop. Planned demand reduction based on gpcd reduction over time allows the City to maintain current water production and water quantity sales revenue. As population grows conservation efforts will lower gpcd without reducing water sales revenue.

Recent drought has caused the City to closely evaluate its water supply and demand. Several of the DMM's identified in the UWMP Act (CWC 10631), particularly those that pertain to indoor water use, have very low rates of return for the costs to provide the programs. The most cost effective DMM's are those that relate to water leak evaluations and repairs, and outdoor watering. The California City customers are very adept at conserving water when a need exists to do so. However, recent statewide historic drought has had a minimal impact on City water supplies. State regulations have created a strong regulatory need to conserve but the City has not experienced a water shortage. Conservation for conservation sake is a personal choice for many, but when there is not a strong local need to conserve it is difficult to get community buy in. The most effective conservation option for the City is to charge more for the water that is used. See section 9.1.11 DMM Conservation Pricing. California City has taken this approach by recently modifying these rates.

10 REFERENCES

Antelope Valley – East Kern (AVEK) Water Agency, "2010,2015 Urban Water Management Plan",

Mojave Water Agency, *"2004 Regional Water Management Plan, Integrated Regional Water Management Plan, Groundwater Management Plan, Urban Water Management Plan",* December 2005,

California City, "*California City 2010 Urban Water Management Plan"*,

California City, "2009-2028 General Plan", October 6, 2009

Stetson Engineering, Inc., "Evaluation *of Groundwater Resources in California City",* December 2008.

California Department of Water Resources, "Guidebook to Assist Urban Water Suppliers to Prepare a 2015 Urban Water Management Plan"

California Energy Commission, *"The Future Is Now: An Update on Climate Change Science Impacts and Response Options for California*, May 2009", Public Interest Energy Research Program

Quad Knopf, "*Water Master Plan for California City"*, September 13, 2002,

20x2020 Water Conservation Plan, February 2010

ORIGINAL

RESOLUTION NO. 04-17-2690

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CALIFORNIA CITY ADOPTING, DIRECTING FILING OF, AND IMPLEMENTING THE CITY OF CALIFORNIA CITY 2015 URBAN WATER MANAGEMENT PLAN AND WATER SHORTAGE CONTINGENCY PLAN

WHEREAS, the California Legislature enacted Assembly Bill 797 during the 1983-1984 Regular Session of the California Legislature (Water Code Section 10610 et.seq.) known as the Urban Water Management Plan Act (the Act).

WHEREAS, California Water Code section 10632 requires water agencies to plan for water shortages of up to 50 percent as part of their Urban Water Management Plan; and

WHEREAS, California City has prepared an update to its Water Shortage Contingency Plan (WSCP); and

WHEREAS, the WSCP is consistent with the California Water Code sections 350 through 359 and section 10632, and guidance provided by the California Department of Water Resources Urban Drought Guidebook 2008 Updated Edition; and

WHEREAS, the Act mandates that every urban water supplier of water providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare, and every five (5) years thereafter update, its Urban Water Management Plan, (UWMP), the primary objective of which is to plan for the conservation and efficient use of water.

WHEREAS, the latest update of the Plan was due at the end of 2015, but a six-month extension was granted by the Legislature for submittals of the 2015 Urban Water Management plan to provide time for urban water suppliers to address Senate Bill X7-7 (SB X7-7), which requires water retailers like the City of California City to develop plans to reduce per capita water use by 20 percent by the year 2020, with an interim target of a 10 percent reduction by 2015; and

WHEREAS, the City of California City prepared and filed a UWMP with the California Department of Water Resources in 2000, 2005, and 2010; and

WHEREAS, considering the six (6) month extension granted by the Legislature, the 2015 Plan should be adopted by June 30, 2016 and filed with the California Department of Water Resources, the California State Library and the City of California City within thirty days of adoption; and

WHEREAS, the Act further requires that the adopted UWMP and WSCP be available for public review during normal business hours for thirty (30) days following its submission to the Department of Water Resources; and

WHEREAS, as an urban water supplier providing water service to over 4,400 customers, California City is subject to the Act and has, therefore, prepared and circulated for public view a Draft 2015 Urban Water Management Plan in compliance with the requirements of the Act, and a properly noticed public hearing regarding the proposed UWMP and WSCP was duly opened by the City Council of the City of California City on March 28, 2017 and was continued until April 11, 2017.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of California City as follows:

1. The 2015 Urban Water Management Plan and incorporated Water Shortage Contingency
Plan are hereby approved and adopted.

2. The Public Work Director is hereby authorized and directed to file the UWMP and WSCP with the California Department of Water Resources, the California State Library and the City of California City within thirty days of adoption in accordance with the Act.

3. When required by conditions contained in the Plan, the Public Works Director is authorized to declare a Water Shortage Emergency and to implement water conservation programs as detailed in the WSCP, including recommendations to the City Council regarding necessary procedures, rules and regulations to carry out effective and equitable water conservation programs.

4. The Public Works Director and staff are hereby further authorized and directed to take such other and further actions as may be reasonably necessary to carry out the purposes and intent of the Plan.

PASSED AND ADOPTED at the regular meeting of the City Council held on April 11, 2017, by the following vote:

AYES: McGuire, Stump, Gomez, Wood
NOES: None
ABSENT: Parris
ABSTAIN: None

Jennifer A Wood
Mayor, Jennifer Wood

ATTEST:

City Clerk, Denise Hilliker

Notice of Public Hearing Publication Affidavit

AFFIDAVIT OF PUBLICATION
State of California
County of Kern

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the Mojave Desert News, a newspaper that has been adjudicated to be a newspaper of general circulation by the Superior Court of the County of Kern, State of California on October 13th 1939 Case number 34058 in and for the County of Kern State of California that the notice which the annexed is a true printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit
I certify under the penalty of perjury under the laws of the State of California that the foregoing is true and correct 3-17-2017

Signed: Misty Hickok
Office Manager

Dated: 3/27/2017

CITY OF CALIFORNIA CITY NOTICE OF PUBLIC HEARING TO ADOPT 2015 URBAN WATER MANAGEMENT PLAN MARCH 28,2017

WHO: City of California City (City Council)

WHEN: March 28, 2017 at 6:00 PM

WHERE: California City Hall, 21000 Hacienda Blvd, California City, CA 93505

WHAT: The City of California City will hold a public hearing at a regular meeting to review and adopt the City's 2015 Urban Water Management Plan (Plan). In compliance with California's Urban Water Management Planning Act (Water Code Section 10610, et seq.), the Plan addresses water sources, reliability of water supply, water conservation goals, and measures that the City will take to manage demand for water to its customers.

The public hearing will be held at a regular meeting of the City Council on Tuesday, March 28, 2017, at 6:00 p.m., at City Hall, 21000 Hacienda Blvd, California City, CA 93505

Staff encourages council community participation in its planning efforts and welcomes comments from customers and public interest organizations at this meeting or in writing sent to the address below. A copy of the draft Plan will be made available for public inspection at City Hall, 21000 Hacienda Blvd, California City, CA 93505, and will be posted on the City's website (www.californiacity-ca.gov).

FOR FURTHER INFORMATION: You may contact the Public Works Director at 7800 Moss Ave, California City, CA 93505, Tel: (760) 373-7297, Fax: (760) 373-7857.

This public hearing shall comply with the requirements of the American with Disabilities Act.

Craig C Platt
Director of Public Works
Dated: March 8, 2017

Resolution Number 10-14-2584 Water and Sewer Fee Structure

CITY OF CALIFORNIA CITY
ADOPTED WATER AND SEWER SERVICE FEES STRUCTURE
EFFECTIVE DATE OCTOBER 14, 2014 CITY COUNCIL RESOLUTION NUMBER 10-14-2584

Adopted Sewer Connection Fees Effective October 14, 2014

Single Family Capacity	$1500.00	Onetime Fee
Multi-Family (up to 18 plumbing units)	$1500.00	Onetime Fee For Each Unit Up To 18
Commercial	$1500.00	Per Equivalent Resident Unit

Adopted Monthly Sewer Rates Effective October 14, 2014

Monthly Residential	See Adopted Sewer Rates Schedule-Residential
Commercial	See Adopted Sewer Rates Schedule-Commercial
Food Service	See Adopted Sewer Rates Schedule-Restaurants
Transient Residential Occupancy	See Adopted Sewer Rates Schedule-Transient
Other Commercial	See Adopted Sewer Rates Schedule-Commercial
Deposal Fee Sewage Truck	See Adopted Sewer Rates Schedule-Sewage Truck

Adopted *Sewer Rates* Effective October 14, 2014

	Monthly Service Charge					
Type of Charge	Current	10/13/2014	7/1/2015	7/1/2016	7/1/2017	7/1/2018
Residential Charge Per EDU	$23.46	$30.50	$39.04	$49.97	$51.18	$52.43
Other Commercial Per HCF	$1.29	$1.68	$2.15	$2.75	$2.81	$2.88
Restaurants Per HCF	$1.85	$2.41	$3.08	$3.94	$4.04	$4.13
Transient Residential Occupancy Per HCF	$2.50	-	-	-	-	-
Prison Charge Per Bed Capacity	-	$12.45	$15.94	$20.40	$20.90	$21.41
Prison Charge Per HCF	-	$0.87	$1.11	$1.43	$1.46	$1.50
From Sewage Truck per 100 Gallons	$0.80	$1.04	$1.33	$1.70	$1.75	$1.79

Adopted Water Rates Effective October 14, 2014

	Monthly Meter Charges					
Meter Size	Current	10/13/2014	7/1/2015	7/1/2016	7/1/2017	7/1/2018
3/4" or smaller	$23.62	$37.79	$44.22	$51.73	$52.99	$54.28
1"	$39.45	$63.12	$73.85	$86.40	$88.50	$90.66
1.5"	$78.65	$125.84	$147.23	$172.26	$176.45	$180.74
2"	$125.89	$201.42	$235.67	$275.73	$282.43	$289.29
3"	$275.65	$441.04	$516.02	$603.74	$618.41	$633.44
4"	$496.02	$793.63	$928.55	$1,086.40	$1,112.80	$1,139.84
6"	$1,102.30	$1,763.68	$2,063.51	$2,414.30	$2,472.97	$2,533.06
8"	$1,889.60	$3,023.36	$3,537.33	$4,138.68	$4,239.25	$4,342.26

	Monthly Usage Charges Per HCF					
Tiers	Current	10/13/2014	7/1/2015	7/1/2016	7/1/2017	7/1/2018
Tier 1	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Tier 2	$0.55	$0.88	$1.03	$1.20	$1.23	$1.26
Tier 3	$1.15	$1.84	$2.15	$2.52	$2.58	$2.64
Tier 4	$1.45	$2.32	$2.71	$3.18	$3.25	$3.33
Tier 5	$1.75	$2.80	$3.28	$3.83	$3.93	$4.02

Tier Breakpoints by Meter Size (CF)							
3/4" or smaller		**1.5"**		**3"**		**6"**	
Tier 1	0 to 900	Tier 1	0 to 2,997	Tier 1	0 to 10,503	Tier 1	0 to 42,003
Tier 2	900 to 1,500	Tier 2	2,997 to 4,995	Tier 2	10,503 to 17,505	Tier 2	42,003 to 70,005
Tier 3	1,500 to 2,500	Tier 3	4,995 to 8,325	Tier 3	17,505 to 29,175	Tier 3	70,005 to 116,675
Tier 4	2,500 to 4,000	Tier 4	8,325 to 13,320	Tier 4	29,175 to 46,680	Tier 4	116,675 to 186,680
Tier 5	4,000+	Tier 5	13,320+	Tier 5	46,680+	Tier 5	186,680+
1"		**2"**		**4"**		**8"**	
Tier 1	0 to 1,503	Tier 1	0 to 4,797	Tier 1	0 to 18,900	Tier 1	0 to 72,000
Tier 2	1,503 to 2,505	Tier 2	4,797 to 7,995	Tier 2	18,900 to 31,500	Tier 2	72,000 to 120,000
Tier 3	2,505 to 4,175	Tier 3	7,995 to 13,325	Tier 3	31,500 to 52,500	Tier 3	120,000 to 200,000
Tier 4	4,175 to 6,680	Tier 4	13,325 to 21,320	Tier 4	52,500 to 84,000	Tier 4	200,000 to 320,000
Tier 5	6,680+	Tier 5	21,320+	Tier 5	84,000+	Tier 5	320,000+

WATER AND SEWER IMPACT FEES EFFECTIVE OCTOBER 14, 2014

Water Impact Fees

Meter Size	Meter Equivalents	Fee
3/4 inch	1.00	$989
1 inch	1.67	$1,649
1-1/2 inch	3.33	$3,298
2 inch	5.33	$5,276
3 inch	11.67	$11,545
4 inch	21.00	$20,775
6 inch	46.67	$46,171
8 inch	80.00	$79,144

Water Capacity Fee Per Prison Bed*
$462

*Based on 175 GPD water usage per prisoner.

Sewer Impact Fees

Impact Fee Per GPD of Sewer Flow
$7.91

Sewer Capacity Fee Per Prison Bed
$1,107

Residential Impact Fee (Per EDU)
$1,898

Miscellaneous Fees	
Late Penalty	$21.40
Door Hangers	$22.87
Turn on/ Turn Off (After Hours)	$114.51
Turn on/ Turn Off (Business Hours)	$57.25